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LIST OF ILLUSTRATIONS.

THE PENNY MAGAZINE

OF THE

Society for the Diffusion of Useful Knowledge.

[The Views consist of—the Weald of Kent, above the Portrait; old Westminster Abbey and the Almonry, on its sides; and the old Hall of the Mercers' Company, beneath. The minor illustrations comprise the Initial Letters in the upper part of the Engraving, which show the only two ornaments of that kind used by Caxton; in the lower part is the Monogram which formed his device; the scroll-work ornament is selected from the wood cuts of his Golden Legend; and the curious figures, &c. which occupy the corners and different parts of the picture are illustrative of Caxton's paper-marks.]

No. 562. VOL. X.—B

LOCAL MEMORIES OF GREAT MEN.

CAXTON.

THE interest we feel in seeing — or in listening to the accounts of those who have seen — the locality of any highly important event, is perhaps one of the most curious as it certainly is one of the most universal and unvarying of the mental characteristics. What long and painful pilgrimages have not been made to see the *place* where a great poet, patriot, or philosopher was born or buried; where an empire was lost and won; the liberties of a people overthrown or established! What countless books too have not been written describing for the hundredth time that which still the public are most heartily willing to read of! And, whatever may be the origin of this interest, the experience of all men attests its utility. Who, we may ask, has ever stood upon a spot rendered sacred to a great memory without finding that the event itself, with all its consequences, became *there* clearer to his apprehension than before; without feeling his love and veneration for all that was great and good—or his contempt and abhorrence for all that was sordid and bad in that event, *there* confirmed and deepened, we might say rendered ineffaceable for ever? But, compared with the interest which all educated persons feel in standing upon such spots—in cherishing the thoughts which Dr. Johnson has beautifully described as associated with Marathon or Bannockburn—the perfection of such feelings can be enjoyed only by a few. The printing-press and the graver make such scenes, in a certain sense, accessible to all. We propose to employ these instruments in bringing such scenes and associations home to the understanding and hearts of readers. Rich, beyond every other country, as our own undoubtedly is in its great men and great events, it has appeared to us that a series of papers in which *their local memories should form the peculiar and distinguishing feature*, would be generally acceptable. Such a series therefore we commence with the life of CAXTON, the first English printer; he who first made knowledge generally accessible to the English people. This is a tribute of gratitude which is due to his memory from the 'Penny Magazine.'

From the fifteenth century is commonly and justly dated the revival of learning in Europe. The destruction of the Greek empire by the taking of Constantinople, and the consequent dispersion of a host of its most illustrious men through Italy—the enlightened munificence of the then reigning pope, Nicholas V., and of the noble prince merchant of Florence, Cosmo de' Medici, all united to give a fresh impulse to the diffusion and cultivation of a taste for Greek literature, and, through its medium, for letters generally. France, Germany, and England speedily felt the invigorating influence; everywhere the concentrated gloom of centuries appeared to be slowly rolling off. Precisely at this period, so important, but also so critical for the interests of literature and the universal well-being of man, was discovered in Germany the art of printing. What a discovery! and at what a time! The fitness of the one alone could have enhanced the value of the other. Into that eventful history we are not here about to enter; we wish merely to remark, that almost from the first moment that the knowledge of the new power (the most sublime that man has ever evoked from material agencies) began to be bruited abroad, among the most attentive and eager of the listeners was an Englishman, then residing in the Low Countries; and who, when he found that it was no chimera of the inventor's brain, but a solid, substantial, albeit a most wonderful thing, set himself in earnest to acquire the necessary skill to direct its manifestations. After the expenditure of a considerable amount of money, some years of the prime of his life, and, we may safely conclude, a world of anxious cares in overcoming the difficulties that he must have met with, he succeeded; and having made two or three preliminary experiments of the art abroad, he returned to England, inspired doubtless with a noble exultation at the thought of the precious blessing he was about to be the means of conferring upon his beloved countrymen. That Englishman was William Caxton.

Of the particulars of Caxton's life we unfortunately know very little; and but for the incidental remarks found occasionally interspersed through the prologues or prefaces with which he commenced his publications, that little would be reduced to almost nothing. He "was born," to use his own words, "and learnt his English in Kent in the weald;"* the date is supposed to be about 1412. His family is said to have been of great repute of old, and "gentle like." In an age when ignorance was general even among the higher classes, for Caxton to have received the education he undoubtedly did, would seem to imply that his parents were no ordinary persons. "I am bounden," he gratefully acknowledges, "to pray for my father's and mother's souls, that in my youth sent me to school, by which, by the sufferance of God, I get my living, I hope truly." He was most probably sent to London at an early age to receive a superior instruction to that obtainable in his native place, for he calls the city his "mother, of whom he had received his nurture and living;" at all events, he was apprenticed there to one Robert Large, an eminent mercer or merchant, who filled the offices of sheriff and lord mayor. It is in accordance with all we know of Caxton's character to find his master, who died in 1441, marking the estimation in which he held him by a bequest of twenty marks. The same year Caxton went abroad; according to some writers, as a factor or general agent of the Mercers' Company, which was then one of the wealthiest and most influential of the metropolitan corporations; according to others, for private members of the company, or on his own account. He continued abroad for at least thirty years, as he himself informs us, residing for the most part in "Brabant, Flanders, Holland, and Zealand." Of his position and character during a part at least of this time, we have an undoubted testimony. In 1444 we find him and one Robert Whitehall, Esq. commissioned as ambassadors and special deputies to continue and confirm a treaty then existing, or to create a new one, between Edward IV. and Philip, duke of Burgundy. The manner in which he acquitted himself of this duty led, in all probability, to the next event in Caxton's life, his entering the household of Margaret, duchess of Burgundy, and sister of the English king. Of his duties and rank in this new situation we are utterly ignorant; some writers have spoken of his holding a merely menial office, an idea too absurd for serious refutation. We have seen the nature of his previous public employment; we shall presently find an indication, equally satisfactory, of the confidential and honourable nature of the private relations existing between him and his noble mistress.

But we have now reached, and must therefore first mention, one of the great events of Caxton's life. This was the printing of his first work, the 'Recueil des Histoires de Troyes,' composed by Raoul le Fevre, chaplain to the duke of Burgundy, and which there is every reason to conclude was the *first book ever printed in the French language*. None of the biographers of Caxton allude to this circumstance, and we are indebted for our knowledge of it to Mr. Hallam,

* Weald, from a Saxon word signifying a forest or uncultivated tract.

who states* that the earliest works printed in France bear the date of 1470 and 1471, whilst there is little doubt that the 'Recueil' was printed during the life of the duke of Burgundy, and therefore in or before 1467; at all events, it must have been finished before March, 1468, for then Caxton began the translation of the same work into the English, and printed it as he translated; and certainly he would not at that period have had two works in hand at once. Mr. Hallam speaks of the omission of this fact by the French biographers as "hardly excusable;" but surely it would be too much to expect them to prove Caxton's claim to an honour that his own countrymen had neglected, and, by neglecting, might be supposed to disbelieve. The second work printed by Caxton was a Latin oration; and the third was the translation of the 'Recueil' before mentioned. This was, as we have seen, commenced at Bruges, in 1468; it was finished at Cologne, in 1471. By printing these three works, Caxton had doubtless obtained considerable proficiency, and perhaps at the same time had instructed persons to act as his future assistants. Within the next two or three years he returned to England, and commenced printing in the precincts of Westminster Abbey. We transcribe the following passage from Stow:—"St. Ann's, in the parish of St. Margaret. There was an old chapel, over against which the Lady Margaret, mother to King Henry VII., erected an alms-house for poor women, which is now turned into lodgings for the singing-men of the college. The place wherein this chapel and alms-house stood was called Eleemosynary or Almonry, now corruptly the Armbry, for that the alms of the abbey were there distributed to the poor, and therein Islip [this is a mistake, *Milling*, and not Islip, was then at the head of the abbey], abbot of Westminster, erected the first press of book-printing that ever was in England, about 1471, where William Caxton, citizen and mercer of London, who first brought it into England, practised it." The figures in the monogram used by Caxton (see the engraving at the head of this article) form the reverse impression of 74, which are supposed to mark the date of Caxton's commencing his art in this country, namely 1474. His first edition of 'The Book of Chess' is dated that year, and if that was printed abroad, as Dr. Dibdin supposes, there is no doubt that the second edition of the same work, dated 1475, was printed at Westminster. The religious house mentioned by Stow stood near the entrance to the abbey, a little to the west of the sanctuary; and as Caxton was under the abbot's protection, there would be nothing remarkable in his alluding, as he has done, to his printing "*in* the abbey at Westminster," even though there were no other foundation for the allusion than the circumstances we have mentioned: at all events, it is not certain that his press was ever erected anywhere but in the Almonry. The following is a copy of a very curious placard printed by Caxton, and now at Oxford:—"If it please any man spiritual or temporal to buy any pyes [or pies] of two and three commemorations of Salisbury, as enprinted after the form of this present letter, which be well and truly correct, let him come to Westminster, into the Almonesrye, at the reed pale, and he shall have them good cheap. Supplico stet cedula."

On his arrival, Caxton met with warm encouragement and effective assistance from various influential persons, in carrying out his good and great object of encouraging learning and genius by providing an effective means of disseminating their fruits, and of furnishing books, to use his own words, "capable of instructing the ignorant in wisdom and virtue." The Abbot of Westminster, Milling, took him, as we have stated, under his immediate protection, a courageous as well as an enlightened act, for so divided in opinion as to the effects of the new wonder were the clergy, that one of their number, a bishop of London, is said to have uttered the remarkable expression, "If we do not destroy that dangerous invention, it will destroy us." The earls of Worcester and Rivers, the two brightest ornaments of the nobility at that period, both distinguished for their learning and intellectual accomplishments, as well as for their military and political abilities, and, it is melancholy to add, both also perishing by the axe of the executioner during the wars of the Roses, (speaking of the former, Caxton finely says, "at which death every man that was there might learn to die"), these noblemen were also patrons of the great printer, and assisted him by translating works for his press. Lastly, Caxton says he "acted under the shadow of the king's noble protection;" and a drawing in a manuscript in Lambeth Palace records his presentation at court by Lord Rivers. Of the progress of the art in Caxton's hands, both as to the mechanical difficulties to be surmounted, and the public approbation that it was indispensable to obtain in the shape of pecuniary encouragement, we can form a tolerably good idea by examining the dates of Caxton's publications. We thus find that one publication only appeared in each of the years 1474, 1475, 1477, and 1478, and none in the two intervening years, or in 1479; but in 1480 three works were issued from the press, in 1481 four, and in the next ten years nearly fifty. These books were generally well adapted to the taste of the reading public of the day. Warton, in his 'History of Poetry,' bears emphatic testimony to the literary results of Caxton's labours, "who," he says, "by translating and procuring to be translated a great number of books from the French, greatly contributed to promote the state of literature in England." Caxton had the gratification of seeing the art he had so worthily begun, in a fair way to be as worthily continued. Before his death, his eminent successor, Wynkyn de Worde, and four others, were all busily engaged in the same pursuit. Three of these were foreigners, as was also De Worde, all probably brought over by Caxton as his assistants. Caxton's death took place in 1491 or 1492, as we find from the parish accounts of St. Margaret's, Westminster, which, in connection with one of these two years, have the following passage:—"Item, at burying of William Caxton, for four torches, 6*s*. 8*d*. Item, for the bell at same burying, 6*d*."

In the 'Lives of the Fathers,' translated by Caxton, but published after his death by Wynkyn de Worde, it is stated by the latter that Caxton finished the translation "the last day of his life;" a significant, and, to our mind, a delightful evidence of the peaceful and appropriate end of the good old man, enjoying to the last the perfect possession of his faculties (he must now have been about eighty years old), and using them to the last in forwarding the business of his art, and the consequent good of his fellow-men. His remains were interred in the church of St. Margaret, where a monument to his memory has been erected by the Roxburgh Club.

We add a few words on Caxton's typography. He appears to have made use of five distinct sets or founts of type, all of the kind now denominated black-letter. Among his other merits, Dr. Dibdin attributes to him the first employment of British artists to illustrate printed books; the wood-cuts in the 'Canterbury Tales' are considered by him to be of native origin. We may also state that the earliest known specimens of English engraving on wood are the figures in Caxton's 'Mirror of the World.'

* 'Introduction to the History of Literature in Europe in the Fifteenth, Sixteenth, and Seventeenth Centuries.'



THE

ROMANCES OF SPAIN.

THE CID.

"I'm Rodrigo of Bivar,
A Castillian bold and true."

THE CID.—No. 1.

"I'm Rodrigo of Bivar,
A Castillian good and true."
Romances of the Cid.

In a low state of social advancement, poetry, unlike every other art, may attain a very high degree of excellence, if not in delicacy and refinement of expression, at least in elevation of thought and vigour of imagination. One of the greatest bards the world has known was

"The blind old man of Scio's rocky isle."

This is explained by the ancient adage that "a man is born, not made, a poet;" and though peculiar natural powers are indispensable for the attainment of excellence in every art, the superior simplicity of the machinery requisite for the expression of poetry, at least under certain forms, leaves room for a more free development of genius.

Metre being the form best adapted to the oral transmission of events, poetry, in the literary history of every nation, has had an origin antecedent to prose. Homer and Hesiod sung centuries before Herodotus wrote. Ages before the prose chronicles of modern Europe were indited, the deeds of heroes and other striking events were recorded and handed down from generation to generation in the form of ballads, which in many instances constitute the foundation of the earlier histories in prose. Every nation in Europe possesses its stock of poetical traditionary lore; the phlegmatic and meditative Scandinavian and German, and the fervid, mercurial child of the South, have alike in the earliest periods of their history chosen poetry as the medium of recording the glorious deeds of their heroes, or whatever occurrences were to them fraught with interest.

No nation, however, can boast of so large a body of ancient popular poems as Spain. Several circumstances combine to explain this unrivalled wealth in ballad literature. The almost unceasing contest which the Christian Spaniards maintained for eight centuries with the Arab invaders of their soil, afforded a long series of brilliant achievements and stirring events to be recorded; the intercourse which, notwithstanding this warfare, existed between the two nations, sufficed to imbue the Christians with that peculiar love of song which characterised their Mohammedan foes. But the principal cause of the great prevalence of ballad poetry among the Spaniards is to be found in the extraordinary facility with which it could be constructed, owing to the flexibility of the language and the simplicity of the metre and rhyme employed—a simplicity so remarkable that a bard might with little difficulty pour forth in song his thoughts as they arose. "The most rude and illiterate man," says Duran, a modern native collector of Spanish romances,* "might compose these loosely formed narrations. Even at the present day, though the romance has now acquired such perfection as to render it adaptable to every class of compositions, it continues as subject to the control of the vulgar as of the learned. All alike compose romances, ... and there is probably not to be found a single Spaniard, even among those who despise the romance for its facility of construction, who has not sung of love, war, heroic deeds, or fictitious events in this species of metrical composition."

It is impossible to determine with accuracy the date of anonymous poems orally transmitted through many ages. It is evident, however, that much of the ballad poetry of Spain which has come down to us is of great antiquity, claiming an origin anterior to the most ancient English ballads extant. Duran is of opinion that the earliest poetry of the Peninsula was in the romance form; yet long poems in Alexandrine metre have been preserved, which are on all hands admitted to have been written in the middle of the twelfth century. We cannot here enter into a lengthened disquisition on this subject; it is enough for us to state the probability that Duran is correct. "Although," says he, "none of the romances extant are in every part anterior to the fourteenth century, I think I can discern in them fragments of others and proverbial stanzas of a much more remote antiquity." As the earlier romances of Spain were the productions of unknown and obscure individuals, they were never committed to writing, but were handed down orally through many generations; and being remodelled and modernised by each in succession, they have retained so little of their original character, as to render it impossible to determine with precision the century to which they belong. Like old coins, they have gained a polish by passing through many hands, but their original stamp is effaced, and the date of their issue is no longer distinguishable.

The romances of Spain are of several kinds;—those which are considered to be strictly historical—those of chivalry, which may be regarded as more or less founded on facts—those decidedly fictitious, the subjects of which are taken from the prose chivalrous romances or the epics of the Italian poets—those relating to love and pastoral subjects—and last, though not least in number or beauty, those commonly classed separately, as the Moorish romances. Some of these, it is believed, are actually the productions of Spanish Moors, but the greater part were written by Christians of the sixteenth and seventeenth centuries, and refer chiefly to the romantic but unavailing struggle of the high-souled Moors of Granada with the forces of Ferdinand and Isabella. As poetical compositions these rank above all the other romances (for at this period ballad literature was not confined to the lower classes, being taken into favour by the noble and the learned), but as historical records they obtain little credit, save in as far as they are confirmed by the prose chronicles. It is to the first-mentioned class of romances, those viewed as historical, that we shall now confine our attention.

To the historian and antiquarian these narrative romances are full of interest. In the early periods of Spanish history far more political liberty was enjoyed, and much freer expression of opinion was allowed than in later days, when Spain was held in the iron grasp of an intolerant and inquisitorial priesthood; and the popular poems of those early times, being wholly disregarded and uninfluenced by the upper ranks, may consequently be considered as exhibiting a more correct representation of facts than the poetry, or even professed history, which springs up in the sunshine of courtly favour. It is not, however, pretended that these romances are to be implicitly relied on as historical or antiquarian authorities. The fact of their having been transmitted orally through many successive ages must invalidate their testimony to a certain extent; yet there is no reason to doubt that the representations made by them of the general state of society in those early ages are accurate; and that they have not in every instance undergone great alterations is evident from the language of some being scarcely less antiquated than that of the earliest Castilian poem extant, written in the middle of the twelfth century. Greater credence is due to these ballads on the ground that, though the productions of the middle ages—

* It may perhaps be superfluous to mention that this word takes its origin from the Romance language, the corrupt Latin spoken in the southern countries of Europe after the overthrow of the Western Empire,—the language in which the Troubadours sung their lays and fabliaux, their tales of love and chivalry.

those days of wild romance—they very rarely overstep the bounds of possibility: they are free from those absurd extravagancies which disfigure the prose romances of chivalry. What little of the marvellous they contain is of a religious character—a few saintly legends sprinkled here and there throughout a vast body of poetry, only in sufficient quantity to tincture it with the peculiar character of the national religion;—such legends in fact as a Romanist of our own enlightened age and country would have little difficulty in crediting. No enchanters to whisk their victims away a thousand miles in the twinkling of an eye to the foul dungeons of some subterranean palace—no dragons to devour their monthly tribute of denuded virgins—no spell-bound knights—no maidens escaping their pursuers, and preserving their honour by rendering themselves invisible with magic rings. All is truth, nature, and simplicity in the Spanish romances. They are in fact little more than simple metrical narrations of events. "The authors of these romances," says the German critic Bouterwek, "never ventured to embellish with fictitious circumstances stories which were in themselves interesting, lest they should deprive their productions of historical credit. . . . . They paid little attention to ingenuity of invention, and still less to correctness of execution. When an impressive story of poetical character was found, the subject and the interest belonging to it were seized with so much truth and feeling, that the parts of the little piece, the brief labour of untutored art, linked themselves together, as it were, spontaneously, and the imagination of the bard had no higher office than to give to the situations a suitable colouring and effect. These antique racy effusions are nature's genuine offspring. To recount their easily-recognised defects is as superfluous as it would be impossible, by any critical study, to imitate a single trait of that noble simplicity which constitutes their highest charm."

These romances may be said to form a connecting link between poetry and prose; scarcely rising above the latter in the display of fancy and imagination, and yet retaining the form and in some respects the distinctive character of the former. Some critics have altogether denied their claim to the title of poetry. "There is as wide a difference," says Juan del Encina, "between a poet and a romance-maker as between a composer of music and a mere singer, as between a geometrician and a stone-cutter." Without entirely concurring in this opinion, we will admit that never does the Spanish popular muse aspire to bold poetical soarings. She is content with a lowly flight. She loves to dwell on even the unimportant actions of her favourite heroes, and to sing of their countenances, their costume, their weapons, their attendants. This minuteness of description, trivial as it may be deemed by those who despise all but the highest efforts of the poetical art, is at least a presumptive evidence of truth, and renders these narrative romances valuable as pictures of the manners and costumes, and as records of the popular opinions of the Spaniards of the middle ages—points on which the sober page of history is too often silent. But they are not utterly devoid of poetic merit; for the narration, however simple, of events in themselves often highly poetic, cannot be wholly prosaic; and this same simplicity of style has a charm to some minds indescribable, and far beyond what could be produced by a more highly wrought or fanciful diction. Moreover the simplicity of the Spanish narrative romances occasionally rises into majesty and even sublimity; and at times they evince a Homeric power of condensing a world of thought into a simple sentence or word. Then the noble and elevated sentiments, the depth and freshness of feeling, the tenderness, the pathos, and the all-pervading nature and truthfulness, ever awakening the sympathies of the reader, make amends for the absence of higher poetical qualities.

We are aware that Southey has decried the merits of the heroic ballads of the Spaniards, and pronounced them to be much inferior to our own. To what authority this opinion is entitled we leave those who are acquainted with the Spanish to judge for themselves. But waiving the question of comparative literary merit, there is one point of view in which the Spanish romances have indisputably the advantage,—it is the elevated tone of morality which pervades them, and this is a feature which essentially distinguishes them from those of England and other northern nations. These latter abound in evidences of being the productions of a state of society scarcely emerged from barbarism. Atrocious murders, inhuman cruelties, daring outrages on person and property, in short every species of vice and crime which belongs to a rude state of society, are dwelt upon in the early ballads of our own country, not only without disapprobation or disgust, but with manifest delight. But even the earliest Spanish romances savour of a society that has made considerable advances in civilization and moral excellence. Their morality is not, it is true, that which commands the smitten to turn his cheek to the smiter; it does not comprehend extraordinary meekness and humility, for martial valour is in this, as in the ancient classic code, esteemed the highest of human virtues. But these romances are redolent of all the virtues and graces which characterise the age of chivalry. To the enthusiastic admiration of valour is united a humane and kindly generosity toward the weak or vanquished, and a pervading gentleness and courtesy; an indomitable pride and self-respect is blended with a noble scorn of whatever is fraudulent, base, and dishonourable, an ardent love of truth, a fervour of loyalty to the sovereign and of devotion to the fair sex equalled only by the depth of religious feeling. There is that union of stern and gentle qualities, which is set forth in a ballad describing a Moorish knight of Granada, who is represented to be

"Like steel amid the din of arms,
Like wax when with the fair."

Deeds of crime are often narrated by these romances as historical facts, but instead of being dwelt upon with zest, they are in general depicted with so much pathos that abhorrence of the crime is heightened by the sympathy excited for the victim. Female frailty, however, appears from these romances to have been as common in Spain in the olden time as in our own day, and to have been regarded with eyes no less lenient; yet even in this respect the ballads of Spain are well matched by those of our own country.

In giving our readers some specimens of Spanish ballads, we select those relating to the Cid. The Cid is the great hero of Spanish history, whose glorious deeds have for eight centuries been the theme of song, and doubtless tended to fire the courage of a Gonsalo and a Cortes, and perhaps in our own times to stir up many a Spanish hero to resist the yoke of a conqueror greater than they. He is thus addressed in one of the ballads which recount his history:—

"Mighty victor, never vanquish'd,
Bulwark of our native land,
Shield of Spain, her boast and glory,
Knight of the far-dreaded brand,
Venging scourge of Moors and traitors,
Mighty thunderbolt of war,
Mirror bright of chivalry,
Ruy, my Cid Campeador!"

"Campeador" is a term hardly translatable into

English, for our word "champion," to which it most nearly answers, excites little of that proud triumphant feeling which thrills the Spanish bosom at the mention of the "Campeador." It is a name which none living has a right to claim but our own hero of a hundred battle-fields.

All the chivalrous virtues are concentrated in the person of the Cid. He was in truth a *chevalier sans peur et sans reproche*, the beau-ideal of a knight-errant, yet not the mere creation of fancy. His existence has indeed been called into question by Masdeu and some few others, on the ground that, as depicted by the romances, he is too extraordinary and perfect a character to be real. But though it be very possible that the popular voice has arrayed its darling in colours not his own, has sung his praises only and concealed his defects, there is, independently of the romances, such a mass of evidence to prove his real existence as must put the fact beyond all doubt to the mind of every candid reader, and assure him that the Cid was something more than a mere imaginary embodiment of the chivalrous virtues. Not only are his deeds recorded by a lengthy poem written within half a century of his death, as well as by the earliest prose chronicles, but he is mentioned by the Arab historians of Spain, who, while admitting his victories, depict him in those shadowy hues in which the vanquished are ever inclined to regard their conqueror. The Cid then, as we gather his history from the numerous romances which have come down to us, we propose to introduce to our readers, translating such portions of those poems as will suffice to impart a knowledge of his history and give an insight into the peculiar character of Spanish romances.

It may be as well to remark that all the romances of the Cid cannot lay claim to an equal antiquity; some, as is evident from their language, being among the most ancient Spanish romances extant, while others are known to have been written as late as the sixteenth century.

For the chronological arrangement of these detached poems, and to supply gaps in the history occasioned by the deficiencies of certain romances and the loss of others, we shall have recourse for guidance to the 'Poem of the Cid,' already mentioned, which Southey thinks the work of a contemporary, and says is "unquestionably the oldest poem in the Spanish language;" and also to two prose 'Chronicles of the Cid,' supposed to have been written about the thirteenth century, but first printed in black letter in the years 1541 and 1552 respectively. The latter embodies all the substance of the former, with much additional matter; and claims to be a translation from the Arabic, though it is more probably a compilation partly from Arabic sources.

We must say a few words on the structure of these ballads. They are in lines of seven or eight syllables, or rather of three and a half or four feet, generally trochaic; but correctness of quantity was little regarded by the artless writers of these romances, who for the most part moulded their lines as best suited their convenience. But it is the rhyme which constitutes the peculiar feature in the structure of these ballads, and gives them their unique character. It is what is called by the Spaniards the assonant rhyme, to distinguish it from the consonant rhyme, or such as is in use among us. The assonant demands that the last vowel, when the line ends in a single syllable, or that the last two vowels, when it ends in a trochee, should correspond in every alternate line, be the consonants what they may. Thus *voz, señor, juró, son, dos*, are assonant rhymes of the first sort; and *dado, malos, diablo, cano, Sancho*, are instances of trochaic assonant. The same rhyme is continued in alternate lines throughout a romance; but the poem itself is divided into *coplas* or stanzas of four lines, occasionally lengthened to six when this form is better suited to the convenience of the writer. In our translations we shall not attempt to preserve the peculiar rhyme, which is altogether foreign to the genius of the English language; for though the Spaniards are from habitude capable of thoroughly comprehending and enjoying the harmonies of the assonant, it would to an English ear cease to be rhyme at all. Nor shall we imitate the monorhymic verse, which is scarcely attainable in our inflexible language. We shall nevertheless adhere to the trochaic measure, endeavouring to represent in English not only the sentiments and expressions, but as nearly as possible the style and dress of the Spanish romances.

The engravings which accompany this series of articles are original designs by Mr. Harvey, who has, whilst following the imaginative course of the story, adhered to the costume and character of the age of the Cid.

DOGS, WILD AND DOMESTIC.

As of all animals (we of course except man) the dog is that which has its mental constitution the most susceptible of impression, and therefore the most readily influenced by education, so of all animals the dog is that the physical constitution of which is the most extensively modified by the agencies of climate and the culture of man. The almost innumerable varieties into which the dog has ramified,—the distinctions which these varieties display, in habits, instinct, form, and size, are so perplexing, and render it so difficult to conceive that all are the lineal descendants of one common origin, that some naturalists have been disposed to assign to each of the well-marked breeds a distinct primitive source.

Without advocating the opinion that the dog is derived from the intermixture of distinct primitive races, or contending on the other hand that its numerous varieties are all referrible to one origin, let us endeavour to ascertain whether among the wild species of the genus *Canis* there be one to which we can refer as the type of the domesticated dog, and which of the numerous varieties of the latter approaches to the primitive stock.

"Those species," observes Buffon, "which man has greatly cultivated, whether belonging to the animal or the vegetable world, are beyond all those which are the most altered; and as the alteration is sometimes to such a degree that we cannot recognise in them anything of their primitive form (such being the case with *wheat*, which has no resemblance to the plant from which it is supposed to have derived its origin), it is not impossible that among the numerous varieties of the dog, which we see in the present day, there is not one which bears a resemblance to the original type, or rather, to the first animal of this species."

Let us then, by way of facilitating our object, take a cursory review of the principal varieties into which the domestic dog has ramified, and attempt to throw them into sections, grouping together those which the most nearly resemble each other in leading physical peculiarities, and compare them with those of certain wild species of the genus Canis, which naturalists have regarded as the primitive source of the dog.

Dogs vary so much in size, and in the length and quality of the hair, that we discard these points at once,—and this, the rather, as we know such modifications to be greatly dependent upon food and climate. If, however, we attend to the form of the head, we shall discern a marked difference in this respect among the

varieties around us, and easily distinguish a group characterised by the elongation of the muzzle, which ends more or less acutely, by the erect or semi-erect position of the ears, and by a somewhat oblique direction of the eye, giving an air of cunning wildness and distrust to the countenance. This latter trait nevertheless is not an invariable accompaniment to the others; it is the diagnostic of a low degree of cultivation, and is never seen in what are termed "high-bred races," however produced may be the muzzle.

To this group belongs the Esquimaux Dog (Canis familiaris, *var.* borealis).

In its general aspect this animal so closely resembles the wolf of its native wilds, that it is not easy to distinguish between them, when seen at a little distance. Indeed, any person visiting the museum of the Zoological Society of London, and looking at a fine specimen of the Esquimaux dog (212, d, of Cat. Mamm., 1838), which is placed near a grey wolf from the high northern parts of America (214, Cat. Mamm., 1838), might leave with the impression that both were of the same species, unless informed to the contrary. In both the fur is deep and thick, both have the same erect ears, the same breadth of skull between them, and the same sharpness of muzzle; and in addition we may state that, in its native wilds at least, the voice of the Esquimaux dog is not a bark, but a long melancholy howl. From this similarity between the wolf of the Esquimaux country, and the variety of dog in question, many naturalists have considered the latter as nothing more than a domesticated race of the former, which at some period man urged by necessity reclaimed, and which, losing in course of time its natural wildness and ferocity, has devoted its honest and faithful services to his welfare. It is however to be remarked, that the antipathy of the Esquimaux dog to the wolf is inveterate: these animals not only regard the wolf as an enemy, but fear it, and though they attack the bear with undaunted energy, they never, unless impelled by necessity, venture to assault the wolf.

The wolf-dog (chien-loup) and the Siberian dog (chien de Sibérie) of Buffon appear to be closely related to the Esquimaux dog; Buffon regards them as immediate varieties of the shepherd's dog ('Chien de Berger,' fol. 4), which he considers to be that which of all is the nearest to the primitive type, since, as he observes, "in all inhabited countries, whether men be savage or partially civilised, dogs resembling this more than any other are spread." In the civilised states of Europe, where other breeds are encouraged, the preservation of this he supposes to arise only from its utility, and from its being, because less attractive than other varieties, despised and abandoned to the peasantry charged with the care of flocks.

Strong as is the resemblance of the Esquimaux dog to the wolf, it is not more so than that of several other varieties of dog to other wild species of the genus *Canis*.

We may instance the Hare-Indian's dog (Canis familiaris, *var.* lagopus), characterised by a narrow elongated and pointed muzzle, by erect sharp ears, and by a bushy tail not carried erect, but only slightly curved upwards, and by the general slenderness of the form. The hair is fine and silky, thickening in winter, when it becomes white or nearly so, but in summer it is marked with patches of greyish black, or slate-grey intermingled with shades of brown. So nearly does this dog resemble the arctic fox of the regions where it is found (namely, the banks of the Mackenzie River and of the Great Bear Lake, traversed by the arctic circle), that they have been considered merely as varieties of each other, one being of the wild, the other of the domesticated race. The Hare-Indian's dog is never known to bark in its native country, and the beautiful pair brought to England by Sir John Franklin and Dr. Richardson, and presented to the Zoological Society, never acquired this canine language; but one born in the Zoological Gardens readily learned it, and made his voice sound as loudly as any European dog of his size and age.

This variety is of great value to the natives of the bleak and dreary realms where the elk and the reindeer are objects of the chace; though it has not strength fitting it for pulling down such game, yet "its broad feet and light make enable it to run over the snow without sinking, if the slightest crust be formed on it, and thus easily to overtake the moose or reindeer, and keep them at bay until the hunters come up." Now it cannot be supposed, nay, it is highly improbable that this active intelligent dog is specifically identical with the arctic fox. Is it then sprung from the same sou ce as the Esquimaux dog? The question involves many difficulties. In these two dogs we see animals closely resembling certain wild species of the genus *Canis* which inhabit the same regions; now if we turn to another part of the world, we shall find parallel cases. In Australia we find a race of dogs, termed Dingo, which are so wolf-like in form, that the first navigators who touched at New Holland scarcely recognised them as dogs. Dampier, in the account of his voyage performed in 1699, states that his "man saw two or three beasts like hungry wolves," and the similarity is evident. These dogs are occasionally domesticated, if we may use such a term, by the natives of Australia, but they exist wild in the remoter districts, hunt in packs, and are the scourge of the grazing districts, making sad havoc among the cattle and sheep. The Dingo is about as large as a harrier; its body is firmly built, its limbs peculiarly muscular; its head is broad between the ears, and its muzzle is acute; its ears are short, pointed, and erect; its tail, which is rather long and somewhat bushy, is pendulous, or at most only raised horizontally. The general colour is sandy red. The eyes are rather small and oblique, and have a very sinister expression.

The agility and muscular powers of the Dingo are extraordinary, and its cunning and ferocity are as much so; it never barks, but howls loudly; with other dogs it is unsocial, and evidently regards them as enemies. This animal is generally believed by naturalists to have been imported by man into Australia, and therefore not to be truly indigenous in that country. It is not found in Van Diemen's Land.

The Dingo, wild and untractable in its native regions, is capable of being only partially domesticated, not more so, indeed, than a wolf. A few years since, we obtained the possession of a young Dingo, bred in this country, which at the age of about six weeks was removed from the mother; and our endeavour was to render it docile and attached. On putting it into a room, it immediately skulked into the darkest corner, and there crouching, eyed us with looks of great distrust; as soon as left to itself, it commenced the most melancholy howling, which, however, it ceased on our return; this for some days was its constant practice, and, when placed in a kennel, the greater part of the day was thus employed. It grew up strong and healthy, and gradually became reconciled to those from whom it was accustomed to receive food, but was shy towards others, retreating into its kennel at their approach. It never barked, nor, like the domestic dog, gave notice of the approach of strangers, and as a guard it was perfectly useless. A great part of the day was spent in howling, and that so loudly as to be heard at the distance of half a mile. When the moon shone brightly, it would sit and utter for hours its lamentations, not a little to the annoyance of the neighbourhood.



a, North American dog; b, Australian dog; c, South American dog; d, Scotch greyhound; e, English greyhound; f, African dog; g, Thibet mastiff.]

The Dingo, whose habits, in a state of domesticity, were such as we have described, with all its shyness, was at the same time ferocious, but would never make an open attack; several times, however, it snapped at persons who happened to be walking within its reach, but only when their backs were turned, and it immediately retreated again into its kennel. Its aspect, manner, and voice were so wolf-like, that most persons supposed it to be a wolf, and we ourselves felt convinced that it would never emulate the ordinary dog, either in affection to its keepers, in docility, intelligence, or voice.

Closely allied to the Dingo, if not the same animal, is a wild dog inhabiting the interior of Sumatra (*Canis Sumatrensis*), which hunts in packs, and resembles a wolf in aspect; its colour is the same, its nose is sharp, its ears erect and hairy, its limbs strong, its tail pendent and bushy, especially about the middle, whence it becomes more slender to the tip.

Besides the Sumatra wild dog, India produces another wild dog, common in the Dukhun, and called Kolsun by the Mahrattas. Colonel Sykes describes it as having the head compressed and elongated, but the nose not very sharp. The eyes are oblique. "The expression of the countenance is that of a coarse ill-natured Persian greyhound, without any resemblance to the jackal, the fox, or the wolf, and, in consequence, essentially different from the *Canis Quao* or *Sumatrensis*

of General Hardwicke. The ears are long, erect, and somewhat rounded at the top. The limbs are remarkably large and strong in relation to the bulk of the animal, its size being intermediate between the wolf and jackal."

This animal, which is termed *Canis Dukhunensis*, is regarded by Colonel Sykes as identical with the wild dog of Nepâl, the *Canis primævus* of Mr. Hodgson, the skulls in both being the same in general form, and the posterior tuberculous tooth of the lower jaw being alike deficient. The only difference between them appears to consist in the quality and colour of the fur, that of the Dukhun animal being paler and less dense than that of the dog from Nepâl.

Mr. Hodgson rejects, with most modern zoologists, the claim of the wolf, the jackal, and the fox to rank as the prototype of the familiar dog. He argues against regarding as such the half-reclaimed Dingo of Australia. He thinks that he has detected this original race in the Búánsú of Nepâl, the eastern and western limits of whose ranges appear to be the Sutlege and the Burhampootra, and which seems to extend, with some immaterial differences, into the Vindyia, the Ghauts, the Nilgiris, the Casiah Hills, and in the chain passing brokenly from Mirzapore, through South Bahar and Orissa, to the Coromandel coast.

But the question here reverts, is the Kolsun, Búánsú, or Dhale (supposing these names to belong to the same species) the origin of our domestic races? Has the wolf-like Esquimaux dog, or the fox-like Hare Indian's dog, descended from it, or the huge Thibet mastiff, which guards the sheep in the very country which the Búánsú inhabits? We know not on what grounds Mr. Hodgson assumes the Búánsú or Dhale to be the origin of the domestic dog, from which it differs in the number of the teeth; but to this point we shall have occasion to revert hereafter. As all reclaimed animals exhibit a tendency to return, if uninfluenced by man, and beyond his jurisdiction, to their primitive state, it would be interesting to ascertain, if possible, what races of dogs are thus emancipated, and what are their characteristics.

The Spaniards introduced the dog into South America and the West Indian Islands, the breed being a kind of hound, and their object was to hunt down, by means of these animals, the defenceless natives: the brutal work being completed, many of these dogs were driven to rely upon their own resources, and became wild, and spread a wild race. Azara states that these dogs are called Yagoua (a name also given to the Jaguar) in Paraguay, where they are very common, inhabiting caves. They formerly abounded in Hayti, Cuba, and all the Caribbean Islands, but are now extirpated there, or nearly so. According to Oexmelin and others, these wild descendants of a reclaimed race resemble the greyhound; others describe them as having the head flat and elongated, the muzzle sharp, and the general aspect wild and savage. The body is slender and fleshless. They are strong and active, and chace their prey in packs. When taken young, they are easily domesticated, differing in this respect from the Dingo of New Holland. Some years since we knew a dog said by its owner to be the offspring of the wild race of Cuba or St. Domingo—we forget which. It was of a red colour, with blackish lips. The muzzle was long and somewhat pointed; the ears were semipendent, the limbs long but powerful, the chest deep, and the loins slender: it was intelligent, but fierce, and its scent was in great perfection. It had no resemblance in aspect or habits to the wolf or to the Dingo, and its nose was broader and less elongated than that of the greyhound, to which, in the figure of the body, it bore some resemblance.

This dog must not be confounded with a species of wolf inhabiting South America, called Agouara-gouaza, or Guara (Canis jubatus), and which is of a cinnamon-red colour. This animal, according to Noseda (see Azara, i., p. 309), so closely resembles a dog, that any person seeing it in the plains, and not really knowing it, would take it for one. It was probably this or some allied species which Columbus is said to have found at the island of St. Martha, and which Herrera describes as "dogs which did not bark."

Wild dogs, or dogs become wild, exist also in various parts of Africa, as Congo, &c., and are said to have a meagre figure and a long head and sharp muzzle, and to hunt in packs. They are perhaps the wild descendants of a fine race of bloodhounds, of which a pair were brought to England by Major Denham, who had employed them for the chace of the gazelle; they followed the game not only by their scent, but also by the eye: their speed is stated to have been extraordinary. In this latter respect they resembled the greyhound, and also in their habits of following the game by the eye; but they differed from the greyhound in possessing a fine scent.

It appears, then, that the wild dogs of India, the Canis Sumatrensis excepted, and the wild descendants of tame dogs, as we see them in South America and Africa, have less of the wolf in their appearance than the half-reclaimed Dingo of the intelligent but surly Esquimaux dog; and it is not impossible that the Dingo and the Sumatran wild dog may be specifically the same. In none, however, of the true wild dogs is the head precisely of the same form as we see in the greyhound, although Colonel Sykes notices a resemblance in this point between the wild dog of the Dukhun and the Persian greyhound. The greyhound and its varieties are characterised by the extent to which the elongation of the head is carried; the ears are small and semipendent, and the eyes, contrary to what we observe in the wild races and in the wolf-like breeds, are full, animated, and expressive—the index of a high state of cultivation.

Buffon regards the French Mâtin and the great Danish dog as the main stock of the greyhound race; but this is not clear. In Scotland and Ireland there existed in very ancient times a noble breed of greyhounds used for the chase of the wolf and the deer, and these are, we contend, the pure source of the common greyhound, which in warm climates degenerates. In Ireland few of this fine race are now to be found. With the extirpation of the wolf, the necessity for keeping up the breed in perfection ceased, and it gradually merged into the ordinary kind used for the hare. In the Highlands, however, where the wild deer yet wanders over extensive hilly ranges, this dog is still found, if not in such perfection as formerly, still greatly superior to the common greyhound in strength, size, and courage. Its hair is rough and wiry, its chest is remarkable for volume, and its limbs are long and muscular. A similar breed existed and still continues to exist in Albania: it was celebrated by the ancients for its prowess. No breed of dogs is more distinct than that of the greyhound (including the common race and the Highland, Irish, and Albanian). Their form and characters are too well known to need a particular detail. They are remarkable for following their game not by the scent, but by the eye; the sense of smell, indeed, appears to be less acute in them than in most other dogs; but in quickness of eye and speed they excel all. From the antiquity of this breed, we might be induced to suppose that in it is to be seen the nearest approach to the primitive source, or to one of the primitive sources of the reclaimed race; and perhaps the Irish greyhound or wolf-dog does present us with some characters in

common with the primitive type whence it took its origin. Granting this, however, we are still as far off as ever from the object of our search;—we have no reason to believe such a type to exist in the Canis primævus, or Búánsú, for though there may be points of resemblance between this animal and the Búánsú, there are points of difference, and especially as respects the number of the teeth; and the resemblance rather leads us to infer that the greyhound, of all domestic dogs, retains the most distinctly the general characters of its primitive origin, than that this origin is to be found in the Búánsú.* We may yet discover a wild dog still more closely related than this to the greyhound. We have only attended so far to dogs with elongated or acute muzzles; but other groups yet remain for our survey, and to these we shall proceed in a future number.

The spirited engraving, drawn by Mr. T. Landseer, represents the Esquimaux dog, the Dingo, the South American dog, the Highland greyhound, the common greyhound, the African hound, and the Thibet mastiff.

DOMESTIC CHEMISTRY.

MILK.

The abundant supply of milk in most countries—indeed in all countries where domestic animals of certain kinds are kept, the extensive use of milk as food, and the nutritious qualities which it possesses, render it such an important article of domestic economy, that a few details respecting its chemical nature will not be destitute of interest. It is one of the most beautiful provisions of nature, that organised beings adapt, as articles of food, substances lower in the scale of organization than themselves; or which, if not originally lower, become so in some measure by certain spontaneous changes which they undergo. From the vegetable kingdom up to man, who occupies the highest rank in the animal kingdom, we may trace the operation of this law; subject, it is true, to certain exceptions, or—as we should rather call them—accidents; for although a man may afford a meal to a wild beast, yet the usual prey of the wild beast is found among animals of inferior size or organization. Carbonic acid and water, both inorganic compounds, constitute to a great extent the food of plants: plants become the aliment, and, by assimilation, a part of the substance of many animals; and these animals again supply food to other animals; and so on in an ascending series.

We have in former papers explained that organic matter is for the most part composed of three or four simple substances or ultimate elements, which, having a strong tendency to unite in twos, form certain proximate principles, which (as far as the article food is concerned) are to a considerable extent identical with those composing the bodies of the animals themselves. Thus many animals have not to form these proximate principles from their elements, but simply to take them as they are already formed by inferior animals or plants. By this provision the assimilating organs become less extensive and complicated; as may be seen by comparing the structure of carnivorous and graminivorous animals,—*i.e.* those which feed respectively on flesh and on grain; while at the same time many animals have the power, in a minor degree, of assimilating substances below as well as above themselves in the scale of organic being.

The close relation which exists between many apparently very different substances, has led to several extensive generalizations. Thus sugar, or the saccharine principle, may be considered characteristic of the vegetable kingdom: the oleaginous, or oily principle, exists both in vegetables and animals; and although different in appearance and form, yet the peculiar properties of oleaginous bodies are strongly marked, and are quite distinct from the saccharine. Another principle is the albuminous, which, under the name of *albumen*, forms the white of an egg, and exists extensively in most animal substances. Now these three principles,—the saccharine, the oleaginous, and the albuminous,—are capable of assuming an infinite variety of forms, without altering their essential composition. They can also pass readily into each other, and combine with each other, or at least these changes can be effected by organic agents.

The conclusion to which these remarks lead is, that as organised beings derive their food from other organised beings, such food must necessarily consist of one or more of the three great principles we have named; and such is indeed the case in every alimentary compound which has been proved to be well adapted to the wants of the animal.

These remarks are well illustrated and supported by the composition of *milk*,—the only specimen of food prepared by nature expressly as such. All other articles of food exist, as it were, for themselves, or in order to minister to the organic body of which they form a part:—they are appropriated by animals, it is true; but they have a separate existence of their own, and certain offices to perform in the economy of nature, apart from their more important one of supplying food. Milk, on the contrary, except as an article of food, seems to perform no office in the animal economy; and we shall probably not err if we suppose milk to stand as the great and perfect model to which all nutritious substances must be referred. In every description of milk is found a mixture of the three principles, noticed above:—the saccharine principle manifests itself in what is familiarly termed "sugar of milk;" the oleaginous principle leads to the production of "butter;" and the albuminous to that of "cheese."

Although the three principles just mentioned are variously modified, and combined in different proportions in the milk of different animals, yet there is no instance known in which any one of the three is altogether absent. Dr. Prout has remarked:—"Perhaps it is impossible to name a substance constituting the food of the more perfect animals, which is not essentially a natural compound of at least two, if not of all the three great principles of aliment. But it is in the artificial food of man that we see this great principle of mixture most strongly exemplified. He, dissatisfied with the spontaneous productions of nature, culls from every source; and by the force of his reason, or rather of his instinct, forms in every possible manner, and under every disguise, the same great alimentary compound. This, after all his cooking and his art, how much soever he may be disinclined to believe it, is the sole object of his labour; and the more nearly his results approach to this object, the more nearly do they approach perfection. Even in the utmost refinements of his luxury, and in his choicest delicacies, the same great principle is attended to; and his sugar and flour, his eggs and butter, in all their various forms and combinations, are nothing more or less than disguised imitations of the great alimentary prototype *milk*, as furnished to him by nature."

We have said that "sugar of milk" is derived from the saccharine principle of that liquid. It may be obtained from skimmed milk, or still better from the whey which remains after the separation of the curd in making cheese. Sugar of milk is sometimes used in medicine, and the chief supply is from those parts of Switzerland where cheese is extensively made. The whey is evaporated by heat to the consistence of honey, poured into moulds, and left to dry in the sun.

In this crude state it is prepared for pharmaceutical purposes by being dissolved in water, clarified with white of egg, and evaporated to a syrupy consistence, when white crystals of sugar are obtained. These are soluble in water, and have a faint sweet taste.

The term "sugar of milk" was objected to by Thénard, on the ground that it is not susceptible of the vinous fermentation, and therefore could not be a real sugar. On this account some persons have denied that ardent spirits could be procured from milk; but the united testimony of travellers respecting the *koumiss* or *arki* of the Tartars and Calmucks, the *leban* of the Arabs, and the *yaourt* of the Turks—all intoxicating drinks prepared from milk, induced the Russian chemist Oseretskowsky to institute an inquiry on the subject. His conclusions were, that milk does not undergo the vinous fermentation when the butter and cheese are removed from it; that whey, although containing all the sugar of milk, does not enter into the vinous fermentation, even though yeast be added. It appears, however, that "sugar of milk," or lactine, as it is chemically termed, is convertible into real sugar by being boiled in water acidulated with sulphuric acid.

The oleaginous principle of milk is separated in the familiar process of churning. When milk is allowed to stand for some time, the cream rises to the surface, and being skimmed off and kept a few days, a peculiar acid contained in milk, called lactic acid, increases in quantity. By agitation the particles of butter unite into a mass, and buttermilk remains.

The albuminous portion of milk may be separated by the action of an acid, which coagulates it and forms curd; this, by pressure, becomes cheese; and the fluid which remains after the curd is separated is called whey. The chemistry of butter and cheese making may occupy our attention hereafter.

A curious discovery respecting the preservation of milk has been made by a Russian chemist. He reduces milk to a dry mass by gentle evaporation, and the powder thus obtained can be preserved in well-corked bottles for any length of time. On adding to this powder the requisite proportion of water, milk is produced which is said to be scarcely distinguishable from fresh cows'-milk. Many a traveller and voyager would welcome such "portable milk" as a valuable addition to his store of provisions.

Another method of preserving milk is to bottle it, to secure the cork with wire, and then to place the bottles in cold water, which must be brought gradually to the boiling point. Milk thus treated is said to keep fresh for a year or two.

The enormous consumption of milk in large towns is a sufficient temptation to the dealers in that article to adulterate it extensively. In London we believe the chief source of adulteration is water, although many persons fancy that chalk, flour, or starch are among the adulterants employed. A moment's consideration will show that chalk cannot be employed to adulterate milk, because it is insoluble therein. But flour may with more probability be employed: thus, the milk is largely diluted with water; a little brown sugar or treacle is added to restore the sweetness: the flour is mixed with water, and boiled; and the paste thus produced is soluble in the milk and water. M. Barreul, in his memoir on milk, published a few years ago, states this was one of the modes in which the Parisian milkmen adulterated milk, and on continuing a searching analysis into the fraud thus practised, it was found that they sometimes employed an emulsion of sweet almonds, with which, for the cost of about one franc, they were able to convert thirty pints of water into milk; but finding a cheaper article in hemp-seed, that became employed instead of almonds, and thus was milk, until the fraud was discovered, manufactured from a small quantity of cows' milk mixed with these adulterants. Some of the Parisian milkmen resorted to a practice which acquired for them the reputation of selling milk that *never turned sour*. This was done by adding a small quantity of subcarbonate of potash or soda to their artificial milk, which, saturating the lactic acid as fast as it formed, prevented the coagulation of the curd.

The flavour of milk is so peculiar, that these or any other adulterations might soon be detected if the use of them became prevalent.

GRATUITOUS EXHIBITIONS OF PICTURES.

THERE are *now* three places in the Metropolis and its neighbourhood where the taste of every man, from the weaver of Spitalfields to the peer of Belgrave Square, may be cultivated by the inspection of the works of the great painters, and this without any charge to the individual. These places are, the National Gallery, Hampton Court Palace, and Dulwich College. It is our intention, from time to time, to present our readers with copies of some of the master-pieces of these collections, carefully drawn on the spot by competent artists, and engraved with every possible excellence attainable by wood-engraving. The subject of the present number is the Infant Saint John of Murillo, drawn by Mr. Fussell, and engraved by Mr. Jackson.

At the time of the opening of the National Gallery in Trafalgar Square, we gave a view of the building (see vol. v., No. 299), and explained the purposes of its erection, taking the opportunity to offer some remarks on the collection of pictures, as well as some notices on the National Galleries on the Continent.

A brief recital of the principal features in the history of the National Gallery will, therefore, be sufficient on the present occasion, as we may refer to the previous account for a more particular detail.

The first step towards the foundation of a public collection of pictures was made by the purchase of the Angerstein Gallery; for this the sum of 57,000*l.* was given, which, although a large was not an extravagant price, since for one picture alone, the Sebastian del Piombo, 20,000*l.* had been previously offered (by Mr. Beckford) and refused, and it is probable that were the collection to be now offered for sale, a larger sum would be obtained for it.

The original collection consisted of about forty pictures, chiefly Italian; but Sir George Beaumont's noble gift of his collection, in 1826, and the bequest of the Rev. William Holwell Carr, shortly after, enriched the gallery with some fine specimens of other schools. The collection has also been increased by several other gifts, and lately by the bequests of Lord Farnborough and Lieutenant-Colonel Harvey Ollney. Several fine pictures have also been purchased for the nation, at different times, of which we may particularly mention Titian's Bacchus and Ariadne, purchased for 5000*l.*; the Virgin au Panier, by Coreggio, 3800*l.*; the Ecce Homo, and the Education of Cupid, by the same master, 11,500*l.* the two; the St. Catherine, by Raffaelle, 4000*l.*; the Holy Family, by Murillo (together with the Brazen Serpent, by Rubens), 7000*l.*; and, lastly, the St. John, by Murillo, for 2100*l.*

Most of these are recent additions to the Gallery, and the last has only just been submitted to the inspection of the public. Some critical remarks have appeared in former numbers of this Magazine on several of the pictures in the Gallery (see Nos. 8, 12, 24, 47, &c.), and we hope not without some effect in directing the attention of visitors to some of the more important objects in the collection, as well as tending to make the taste for the fine arts more popular. Since the building in Trafalgar Square was erected,



[The Infant Saint John.—Murillo.]

and the pictures seen to more advantage, the visitors have gradually been becoming more numerous, and appear better to appreciate the beauties with which they are surrounded.

The Infant St. John, by Murillo, has only recently been added to the Gallery, and must be unknown to a great majority of our readers. This has partly influenced us in giving it priority, but it is deserving of it in other respects; the subject is an interesting one, and as a picture it deservedly ranks high.

The composition, colour, and expression are good, and the whole effect is very impressive. The tender and innocent expression in the features of the "disciple whom Jesus loved," of him who was selected to take so great a share in the propagation of the mild precepts of Christianity, is finely depicted; and the happy effect with which the painter has repeated this expression in the face of the lamb is deserving of particular commendation. Though there is a delightful simplicity in the whole composition, as well as in the particular features of the young saint and his companion, it is managed with so much art (though it is only perceptible in its effects) that the artist has been enabled to elevate the composition to a degree of sublimity sufficient to inform us that the figure of the young shepherd is that of one destined to become an actor in events of a great and holy character. Though it should seem that John was about twenty-five or twenty-six years of age when he was called to follow Christ, painters have delighted to imagine him as the early associate of his Master, and in almost every picture of the Holy Family, so favourite a subject with the old painters, he is represented as partaking of the joys of childhood in the companionship of him to whom in after-life he expressed such devotion, whose precepts he was indefatigable in propagating, and by whom he was regarded with peculiar favour and affection. Murillo seems to have been imbued with the same spirit as his immediate predecessors; and in this picture he appears to have intended to represent the idea that, even in his early days, the mild and affectionate disciple cherished the 'Lamb of God with the fond devotion for which he was distinguished in his after-years.

This picture was purchased for 2100*l.*, at Sir Simon Clarke's sale last year, at which sale also the companion picture, the Good Shepherd (certainly superior, and better known by the engravings of it), was knocked down to Mr. Rothschild for the sum of 3045*l.* It is stated to have been in the Robit collection. It is the last picture added to the Gallery up to the present time (1841), and makes the total number in the collec-

tion 177. These we have classed (taking the names from the Gallery Catalogue) according to the schools; but it should be observed that with respect to some few of the pictures, opinions differ as to the name of the artists.

The *plan* of the following numerical synopsis has been taken from one which appeared in the 'Penny Cyclopædia,' vol. xvi., p. 103, but the dates of the births and the deaths of the artists, when known, have been added, and the enumeration brought up to the present time (January, 1841):—

Italian School.

Baroccio, b. 1528, d. 1612	1
J. Bassano, b. 1510, d. 1592	1
L. Bassano, b. 1559, d. 1623	1
Bronzino, b. 1577, d. 1621	1
Buonarotti Michael Angelo, b. 1474, d. 1564	1
A. Caracci, b. 1560, d. 1609	9
L. Caracci, b. 1555, d. 1619	3
Caravaggio, b. 1569, d. 1609	1
Correggio, b. 1494, d. 1534	6
Canaletto, b. 1697, d. 1768	3
Domenichino, b. 1581, d. 1641	4
Ercole da Ferrara	1
Mazzolino da Ferrara, b. 1481, d. 1530	2
Garofalo, b. 1481, d. 1559	2
Giorgione, b. 1477, d. 1511	1
Guercino, b. 1590, d. 1666	1
Guido, b. 1574, d. 1642	4
C. Maratti, b. 1652, d. 1713	1
Mola, b. 1609, d. 1665	3
Paduanino, b. 1552, d. 1617	1
Parmegiano, b. 1503, d. 1540	1
Pannini, b. 1691, d. 1758	1
S. del Piombo, b. 1485, d. 1547	3
B. Peruzzi, b. 1481, d. 1536	1
Raffaelle, b. 1483, d. 1520	2
Giulio Romano, b. 1492, d. 1546	1
Salvator Rosa, b. 1614, d. 1673	1
A. del Sarto, b. 1488, d. 1530	1
Titian, b. 1480, d. 1576	5
Tintoretto, b. 1512, d. 1594	1
A. Veronese, b. 1600, d. 1670	1
P. Veronese, b. 1530, d. 1588	2
L. da Vinci, b. 1445, d. 1520	1
	68

Spanish School.

Murillo, b. 1613, d. 1685	3
Velasquez, b. 1594, d. 1660	1
	4

Flemish and Dutch.

J. Both, b. 1610, d. 1650	1
Cuyp, b. 1606	1
Decker	1
Van Goyen, b. 1596, d. 1656	1
Vander Helst, b. 1613, d. 1670	2
Jordaens, b. 1594, d. 1678	1
Maes, b. 1632, d. 1693	2
Vander Neer, b. 1619, d. 1683	1
Vander Plaas, b. 1647, d. 1704	1
Rembrandt, b. 1606, d. 1674	7
Rubens, b. 1577, d. 1640	7
Stork, d. 1708	1
Steinwyck, b. 1550, d. 1603	1
Teniers, b. 1610, d. 1694	3
Vander Velde, b. 1633, d. 1707	2
Vandyck, b. 1598-9, d. 1641	4
	36

French.

S. Bourdon, b. 1616, d. 1671	
Claude, b. 1600, d. 1682	10
Lancret, b. 1690, d. 1743	4
N. Poussin, b. 1594, d. 1665	8
G. Poussin, b. 1600, d. 1663	6
	29

English.

Beaumont	[illegible]
Beechy	1
Constable	1
Copley, b. 1737, d. 1815	1
Gainsborough, b. 1727, d. 1788	2
Hogarth, b. 1698, d. 1764	7
Hoppner, b. 1759, d. 1810	1
Housman, or Huysman, b. 1656, d. 1696	1
Jackson, b. 1778, d. 1831	2
A. Kauffman, b. 1742, d. 1807	1
Lawrence, b. 1769, d. 1830	4
Pether	1
Reynolds, b. 1723, d. 1792	8
West	4
Wilkie	[illegible]
Wilson, b. 1714, d. 1782	2
	40
Total	177

SHAKSPERE AND HIS WILL.

AMONG the many idle representations of the private life of our great dramatist, one of the most current has been, perhaps, that of his having lived on ill terms with his wife. This has received the chief grounds of support from the manner in which she is mentioned in his will. In the recently published part of the 'Pictorial Shakspere' the received interpretation of the will has been successfully combated, and the reputation of one who in all likelihood was as truly a good as he was a great man completely relieved from this reproach. The Editor says:—"We felt desirous, upon the earliest possible occasion after the subject had fully presented itself to us, to vindicate Shakspere from a calumny which, through the long continuance of a misapprehension, has constantly presented itself to the thoughts even of those who were most anxious to believe that the poet of universal benevolence—the gentlest, the most tolerant spirit that ever came to win men to charity and love, by other than the lessons of inspiration—was incapable of a deliberate act of cruelty and contempt towards the wife of his bosom.

"The theory that Shakspere's married life was one of unhappiness has, like many other more recent stories of the same kind, been somewhat too easily credited. Mr. de Quincey thinks that it made him resolve, after 'four years of conjugal discord,' upon his plan of 'solitary emigration to the metropolis.' Mr. Moore thinks that it is proved by his assumed non-residence at Stratford, having regard to the time of the births of his children, and by his last bequest to her. There was one who knew Shakspere well,—who, illustrious as he was by birth and station, does not hesitate to call *him*, one of the poor players of the Blackfriars, 'my especial friend'—who testifies decidedly enough to the public estimation of his domestic conduct. Lord Southampton, speaking of Burbage and Shakspere, thus writes to Lord Ellesmere, the lord chancellor, in 1608, in a letter by which he introduced them to him to plead their own cause against an act of oppression of the lord mayor and aldermen of London:—'Their trust and suit now is, not to be

molested in their way of life whereby they maintain themselves and their wives and families, being both married and of good reputation.'* It is to the propriety of the domestic conduct of Burbage and Shakspere that Lord Southampton alludes in the words 'good reputation.' He had already, speaking of one as 'our English Roscius,' and of the other as 'writer of some of our best English plays,' described them as 'right famous in their qualities.' Yet one of these, according to the received interpretation of his will, compromises his 'good reputation,' not six years afterwards, by executing a document, signed by five witnesses, his friends and neighbours, in which he treats his wife with neglect and 'bitter sarcasm,' for which estranged affections would have been no warranty; and consigns her, with this solemn avowal of contempt and hatred to a miserable dependence, not even recommended or implied, upon the bounty of their common children. According to the dictum of Malone, who first dragged this offensive bequest into notice sixty years ago, 'His wife had not wholly escaped his memory; he had forgot her,—he had recollected her,—but so recollected her, as more strongly to mark how little he esteemed her; he had already (as it is vulgarly expressed) cut her off, not indeed with a shilling, but with an old bed.'

"The 'forgetfulness' and the 'neglect' by Shakspere of the partner of his fortunes for more than thirty years is good-naturedly imputed by Steevens to 'the indisposed and sickly fit.' Malone will not have it so:—'The various regulations and provisions of our author's will show that at the time of making it he had the entire use of his faculties.' We thoroughly agree with Malone in this particular. Shakspere bequeaths to his second daughter three hundred pounds, under certain conditions; to his sister, money, wearing apparel, and a life-interest in the house where she lives; to his nephews, five pounds each; to his grand-daughter, his plate; to the poor, ten pounds; to various friends, money, rings, his sword. The chief bequest is that of his *real* property to his eldest daughter, Susanna Hall, for her life, and then entailed upon her heirs male; and in default of such issue, upon his grand-daughter and heirs male: and in default of such issue, upon his daughter Judith and her heirs male. Immediately after this comes the clause relating to his wife:—

'Item, I give unto my wife my second-best bed, with the furniture.'

"It was the object of Shakspere by his will to perpetuate a family estate. In doing so, did he neglect the duty and affection which he owed to his wife? He did not.

"Shakspere knew the law of England better than his legal commentators. His estates, with the exception of a copyhold tenement, expressly mentioned in his will, were freehold. His wife was entitled to *dower*. She was provided for amply, by the clear and undeniable operation of the English law. Of the houses and gardens which Shakspere inherited from his father, she was assured of the life-interest of a third, should she survive her husband, the instant that old John Shakspere died. Of the capital messuage called New Place, the best house in Stratford, which Shakspere purchased in 1597, she was assured of the same life-interest from the moment of the conveyance, provided it was a direct conveyance to her husband. That it was so conveyed we may infer from the terms of the conveyance of the lands in Old Stratford and other places, which were purchased by Shakspere in 1602, and were then conveyed 'to the onlye proper use and behoofe of the saide William Shakspere, his heires and assignes for ever.' Of a life-interest in a third of these lands also was she assured. The tenement in Blackfriars, purchased in 1614, was conveyed to Shakspere and three other persons; and, after his death, was re-conveyed by those persons to the uses of his will, 'for and in performance of the confidence and trust in them reposed by William Shakspere deceased.' In this estate, certainly, the widow of our poet had not dower.

"It is unnecessary for us, in this place, at least, more minutely to enter into the question before us. It is sufficient for us at present to have the satisfaction of having first pointed out the absolute certainty that the wife of Shakspere was provided for by the natural operation of the law of England. She could not have been deprived of this provision except by the legal process of Fine—the voluntary renunciation of her own right. If her husband had alienated his real estates, she might still have held her right, even against a purchaser. In the event, which we believe to be improbable, that she and the 'gentle Shakspere' lived on terms of mutual unkindness, she would have refused to renounce the right which the law gave her. In the more probable case, that, surrounded with mutual friends and relations, they lived at least amicably, she could not have been asked to resign it. In the most probable case, that they lived affectionately, the legal provision of dower would have been regarded as the natural and proper arrangement,—so natural and usual as not to be referred to in a will. By reference to other wills of the same period it may be seen how unusual it was to make any other provision for a wife than by dower. Such a provision in those days, when the bulk of property was *real*, was a matter of course. The solution which we have here offered to this long-disputed question supersedes the necessity for any conjecture as to the nature of the provision which those who reverence the memory of Shakspere *must* hold he made for his wife."

* 'New Facts regarding the Life of Shakspeare,' p. 33.

THE WAITS.

We have seen "the latter end of a sea-coal fire"—Dame Quickly's notion of the perfection of enjoyment. The snow lies hard upon the ground—icy. The noise of the streets is almost hushed, save that the cabman's whip is occasionally heard urging his jaded horse over the slippery causeway. We creep to bed, and, looking out into the cold, as if to give us a greater feeling of comfort in the warmth within, see the gas-lights shining upon the bright pavement, and, perhaps, give one sigh for poor wretched humanity as some shivering wanderer creeps along to no home, or some one of the most wretched nestles in a sheltering doorway to be questioned or disturbed by the inflexible police watcher. It is long past midnight. We are soon in our first sleep; and the dream comes which is to throw its veil over the realities of the day struggle through which we have passed. The dream gradually slides into a vague sense of delight. We lie in a pleasant sunshine, by some gushing spring; or the never-ceasing murmur of leafy woods is around us; or there is a harmony of birds in the air, a chorus, and not a song; or some sound of instrumental melody is in the distance, some faintly remembered air of our childhood that comes unbidden into the mind, more lovely in its indistinctness. Gradually the plash of dripping waters, and the whispering of the breeze among the leaves, and the song of birds, and the hum of many instruments, blend into one more definite harmony, and we recognise the tune, which is familiar to us,—for we are waking. And then we hear real music, soft and distant; and we listen, and the notes can be followed;

and presently the sound is almost under our window; and we fancy we never heard sweeter strains; and we recollect, during these tender, and, perhaps, solemn chords, the honied words, themselves music,—

"Soft stillness, and the night,
Become the touches of sweet harmony."

But anon, interposes some discordant jig; and then we know that we have been awakened by the WAITS.

In the times when minstrelsy was not quite so much a matter of sixpences as in these days, there were enthusiastic people who made the watches of the night melodious, even though snow was upon the ground; and there were good prosaic people who abused them then as much as the poor Waits sometimes get abused now. These were the days of serenaders, and England, despite of its climate, was once a serenading country. Old Alexander Barclay, in his 'Ship of Fools,' published in 1508, describes to us "the vagabonds" whose enormity is so great,

'That by no means can they abide, ne dwell,
Within their houses, but out they need must go;
More wildly wandering than either buck or doe,—
Some with their harps, another with their lute,
Another with his bagpipe, or a foolish flute."

But he is especially wrath against the winter minstrels:—

"But yet moreover these fools are so unwise,
That in cold winter they use the same madness;
When all the houses are lade with snow and ice,
O, madmen amased, unstable. and witless!
What pleasure take you in this your foolishness?
What joy have ye to wander thus by night,
Save that ill doers alway hate the light?"

The "fools" had the uncommon folly to do all this for nothing. But in a century the aspect of things was changed. The "madmen" divided themselves into sects—those who paid, and those who received pay; and the more sensible class came to be called *Waits*—literally, *Watchers*. If we may judge from the following passage in Beaumont and Fletcher ('The Captain,' Act ii., Sc. 2), the performances of the unpaid were not entirely welcome to delicate ears:—

"*Fab.* The touch is excellent: let's be attentive.
Jac. Hark! are the WAITS abroad?
Fab. Be softer, prithee;
'Tis private music.
Jac. What a din it makes!
I'd rather hear a Jew's trump than these lutes;
They cry like school-boys."

The *Waits*, according to the same authority, had their dwellings in the land of play-houses and beargardens, and other nuisances of the sober citizens; and they were not more remarkable than the "private music" for the charms of their serenadings:—

"*Citizen.* Ay, Ned, but this is scurvy music! I think he has got me the *Waits* of Southwark."

The *Waits* had, however, been long before a part of city pageantry. But as the age grew more literal and mechanical,—as music went out with poetry, when the cultivation of what was somewhat too emphatically called the useful became the fashion,—the Waits lost their metropolitan honours and abiding-place; and came at last to be only heard at Christmas. They retired into the country. The last trace we can find of them, as folks for all weathers, is at Nottingham, in 1710. The 'Tatler' (No. 222) thus writes:—

"Whereas, by letters from Nottingham, we have advice that the young ladies of that place complain for want of sleep, by reason of certain riotous lovers, who for this last summer have very much infested the streets of that eminent city with violins and bass-viols, between the hours of twelve and four in the morning.' Isaac Bickerstaff adds, that the same evil has been complained of "in most of the polite towns of this island." The cause of the nuisance he ascribes to the influence of the tender passion. "For as the custom prevails at present, there is scarce a young man of any fashion in a corporation who does not make love with the *Town Music*. *The Waits* often help him through his courtship." The censor concludes, "that a man might as well serenade in Greenland as in our region." But he gives a more sensible reason for the actual decay of serenading, and its unsuitableness to England. "In Italy," he says, "nothing is more frequent than to hear a cobler working to an opera tune; but, on the contrary, our honest countrymen have so little an inclination to music, that they seldom begin to sing till they are drunk." It is strange that a century should have made such a difference in the manners of England. In Elizabeth's reign we were a musical people; in Anne's, a drunken people. Moralists and legislators had chased away the lute, but they left the gin; and so madrigals were thrust out by tipsy derry-downs, and the serenader became a midnight bully.

The Waits are a relic of the old musical times of England; and let us cherish them, as the frosted bud of a beautiful flower that has yet life in it.

Woollen Manufacture in Siberia.—In the middle of one of these newly arisen birch woods is situated the manufacturing town of Telma, consisting of two rows of log houses, erected on the sides of a log road covered with smooth planks. A handsome stone church in the Italian style, and spacious barracks, give the place an air of importance. But the workhouse of Telma is the wonder of Siberia. It is with constantly increasing admiration (says M. Ermann) that one approaches the workhouse, a fabric of two stories, and which is, no doubt, the largest and finest specimen of architecture in North Asia. The front of it has a length of three hundred and sixty-four feet, and is adorned with massive columns, between which, in two rows, are the windows, of the purest plate glass. The lower story is divided into three apartments, in which are carried on the manufacture of cloth. Above dwell the officers who manage the institution on the account of the crown. Stone warehouses, and mills of different kinds, are situated along the banks of the stream which drives the machinery of the workhouse. The advantages of the locality were discovered a century ago, by private speculators, since which time Telma has been famous for its cloth manufactory. More recently, glass, paper, and linen have been added to its productions. The inhabitants of Telma are about two thousand in number, of whom eight hundred find employment in the manufactories. They are persons exiled for crimes, but whose manners, nevertheless, are irreproachable in their new and more fortunate situation, in which they are neither pressed by want nor goaded by despair. They are supplied gratuitously with meal, and receive, besides, an amount of wages proportioned in each instance to the value of the labour. The wool required for the manufactory at Telma is procured chiefly from the Buraets and Tunguses, who wander with their flocks over the southern borders of Siberia. The machinery for combing and spinning the wool was originally procured from England, and was afterwards made in Siberia, according to the English model, at one-fifth of the cost of the latter. Telma produces annually about fifty thousand yards of woollen cloth, and half that quantity of linen. The former is sold at a price not exceeding half-a-crown a yard. Among the causes operating to depreciate it, one of the most influential is fashion. So decided a preference is given to European cloth, that nothing short of a very great saving in the price can reconcile the Siberian to the manufacture of his own country. Pains are taken, notwithstanding this discouragement, to improve the wool, and in 1830 a flock of four hundred and eighty Spanish sheep were driven from Moscow to Irkutsk; and, notwithstanding the length of the journey and the plagues of the Barabinskian steppes, three hundred of them reached their destination in safety —*Travels in Siberia, by a German.*



[The Portrait of William (at the top of the Engraving) is from a MS. History, written by William of Jumiéges, in the eleventh century, and now in the Bibliotheque at Rouen; the other Portrait is that of Harold, from an English MS., entitled 'Liber Benedictionum,' preserved in the Bibliotheque at Paris. Both Portraits, it is believed, are now for the first time engraved in this country. The other Illustrations comprise the Seal of Battle Abbey,—a View of the Coast where the Normans landed,—Pevensey Castle,—and a design exhibiting the Costume of the Warriors engaged in the Battle. The scroll-work ornaments are taken from MS. Illuminations of the period.]

LOCAL MEMORIES OF GREAT EVENTS.

THE BATTLE OF HASTINGS.

WHATEVER our individual opinions may be as to the object or necessity of any particular battle, or even of battles and warfare generally, there are few, we conceive, who can look upon the scene of a "well-foughten field" without finding themselves drawn, as it were, into its influences, or, as memory brings before them the chief features of that dread struggle, without participating more or less in all its wild commotion and excitement. The fate of the combatants, also, must necessarily arouse our attention and solicitude: the courage and fortitude of the soldier, the intellectual skill and power of the commander, who, amidst all the horrors of the time, calmly orders, watches over, foresees, and provides for everything, are in themselves, apart from the purposes for which they are exerted,

qualities that appeal irresistibly to our sympathy and admiration. But let the safety of a kingdom, the happiness and liberty of a people, hang at the same time trembling in the balance, and the struggle assumes a positively sublime aspect: whatever its issue, we can never afterwards look upon that field without emotions of a powerful and solemn nature. Such a struggle was the battle of Hastings, the subject of the present paper; in which we propose to notice some of the more interesting details of that tremendous conflict in connection with the localities to which they have been referred.*

The aspect of the field is now very different from what it was on Harold's birth-day, the fatal 14th of October, 1066; a change produced by the erection of the magnificent abbey, the walls of which embraced the whole of the hill forming the centre of Harold's position. Prior to this period there is no reason to suppose that any buildings stood in the neighbourhood, with the exception of a church, dedicated to St. Mary, for the use of the peasants scattered about the surrounding forests. On the summit of the hill in question, and on the left of the road from Hastings to London, about eight miles from the former place, the Saxon king planted his standard, and immediately opposite, on a similar hill, waved the flag of the Norman invader. Between the hills, a beautiful valley of green meadows and luxuriant woods winds away, in a northern direction, towards Hastings, where it meets the sea. The village of Battle, which owes its existence entirely to the building of the abbey, extends principally along the sides of the road beyond the spot where we turn off to reach the ruins of the latter. Whilst yet at a distance these present no very striking *coup d'œil*. A large barn-like outline meets the eye, mixed with broken walls and buttresses, and the whole encompassed with trees; but on near examination we find the undoubted remains of a once rich and noble structure. Little however of the original architecture now exists, the principal portions having been rebuilt during the time of the later Henries. The abbey at present consists of three sides of a large quadrangle, of which the middle has been converted into a dwelling-house, and the others are ruinous. On the front of the dwelling-house we find nine elegant arches filled up; these are the only remaining portions of the church. It is very probable, though we do not find the opinion anywhere put forth, that the abbey seal (of which a representation is given in the engraving at the head of this paper) presents us with a faithful view of that edifice. Its ground-plan is no longer traceable throughout, but a dark pool is said to mark the place where the foundations of the choir were dug up, and in this choir stood the high altar, erected at the spot on or near which some of the most important and interesting events of the battle occurred. Here Harold planted his standard, with the solemn determination to conquer or to die beneath it. Here, when, after so many hours of conflict the strategy of William accomplished what neither the valour nor superior numbers of his troops could accomplish for him (we allude to the manœuvres by which the too impetuous Saxons were drawn from their position and disorganised), and the battle was evidently going in favour of the Normans, here, we repeat, then took place the last struggle. Here the arrow, on the flight of which such momentous consequences hung, penetrated Harold's brain, and deprived his followers of all hope of success. Here the brothers of the fallen monarch, Gurth and Leofwin, and other brave men, still gathered round the standard as their last rallying point, and were immediately hemmed in by the Normans, who made the most desperate efforts to seize it. Robert Fitz-Ernest had almost grasped it, when a battle-axe laid him low. Twenty Norman knights then undertook the task, and, with the loss of ten of their number, succeeded in lowering the English standard, and planting in its stead the consecrated banner sent from Rome, in token of victory. Here, lastly, when all was over, and the exulting Normans were caracolling their horses over the dead bodies, in their riotous joy at having won such a battle, and at the prospect of the plunder that lay before them in the rich towns and broad fertile meads of England, William ordered a space to be cleared of the slain, and there, on that dreadful spot, with sixty thousand dead or dying men stretched all around, *feasted his principal officers!* In connection with this spot, every writer we have consulted, following Mr. Gilpin,* supposes that the accident of Harold's standard being fixed here could scarcely have determined the choice of the site for the erection of the church, as the whole neighbourhood does not afford any other place equally eligible; and therefore concludes the former statement to have been a mistake. But surely the very reasons given for the choice of the spot in one case, apply with at least equal reason to the other. Where should Harold have fixed the rallying mark for his men, but on the highest and most conspicuous place he could find?

Leaving the abbey, we proceed to notice some of the other localities connected with the battle, foremost among which in interest is that part of the coast where the Conqueror landed. Between the lofty foreland of Beechey Head and Hastings, a direct distance of about ten miles, the coast forms a kind of bay comprising a magnificent sweep of romantic and beautiful scenery. About the centre of this is Pevensey with its ancient castle, and between Pevensey and Hastings, at or near a place called Bulverhithe, landed the Norman expedition. The precise spot is not improbably marked out by a tradition preserved in the neighbourhood. At a short distance westward from Hastings are the ruins of an ancient chapel, supposed to have been dedicated to St. Leonard, and about a quarter of a mile beyond, at a place called the "Old Woman's Tap," we find a flat rock, overhanging a pool, known as the Conqueror's Table, and the tradition is that he dined here immediately after the disembarkation. The expedition had quitted St. Valery, near Dieppe, on the morning of the 26th of September, 1066. "William led the van in a vessel which had been presented to him for the occasion by his wife Matilda, and which was distinguished by its splendid decorations in the day, and in the darkness of night by a brilliant light at its mast's head......This ship sailed faster than all the rest, and in his impatience William neglected to order the taking in of sail to lessen its speed. In the course of the night he left the whole fleet far astern. Early in the morning he ordered a sailor to the mast-head to see if the other ships were coming up. 'I can see nothing but the sea and sky,' said the mariner, and then they lay-to. To keep the crew in good heart, William ordered them a sumptuous breakfast, with wines strongly spiced. The sailor was again sent aloft, and this time he said he could make out four vessels in the distance; but mounting a third time shortly after, he shouted 'Now I see a forest of masts and sails!' A few hours after this, the united Norman fleet came to anchor on the Sussex coast, without meeting with any resistance; for Harold's ships, which had so long cruised upon that coast, had been called elsewhere, or had returned into port through want of pay and provisions."† An interesting incident marked the landing. William himself was the last man who quitted the ships, and as his foot touched ground he

* For a general account of the battle and of the abbey, see vol. ii., p. 211, of the 'Penny Magazine.'

* 'Observations on the Coasts of Hampshire, Sussex,' &c.

† 'Pictorial History of England,' vol. i., p. 210.

made a false step, and fell upon his face. The mishap caused a general feeling of apprehension among the superstitious soldiery, who cried out "God keep us! but here's a bad sign!" The Conqueror, however, leaping gaily to his feet, and showing them his hand full of English earth, cried "What now? what astonishes you? I have taken seizin of this land with my hands, and by the splendour of God, as far as it extends, it is mine—it is your's!" Another version of this story is to the effect that William saved himself from falling, but sank to some depth in the sand, and could hardly extricate himself; on which one of his followers remarked, "You had almost fallen, my lord, but you have well maintained your standing, and have now taken deep and firm footing in the soil of England: the presage is good, and hereupon I salute you king!" From the coast William marched to Hastings, near which he formed a camp, and set up two wooden towers or castles, which he had brought with him (in pieces) from Normandy, and placed in them his provisions, stores, &c. He now endeavoured to make himself well acquainted with the surrounding country by means of exploring parties, which he occasionally accompanied in person. At one of these times, he set out from the camp attended by only fifteen horsemen, and was absent for several hours. The roads were very bad, and after a long ramble, to make matters worse, they lost their way, and before they could recover it, their horses were so jaded, that all the party were compelled to dismount, and return on foot, encumbered as they were with their heavy armour. William Fitz-Osbourne, one of their number, became so exhausted with fatigue, that the duke, to relieve him, took his helmet, and carried it himself all the way to the camp. The castle of Pevensey was at this time occupied by a detachment of Norman soldiers. This is an edifice of great antiquity, built, it is supposed, by the Romans, and probably restored by William at or soon after the period of the Conquest. The Roman *themelii*, or layers of brick disposed in the Saxon herring-bone fashion, are still visible in the walls. The castle stands upon an eminence, the east side of which was formerly washed by the sea, though now at some distance from it. It is of a triangular form, with the corners rounded off. The walls average about ten feet in thickness, and are tolerably entire to the height of twenty or twenty-five feet; they are strengthened by solid towers. The buildings in the area of the interior consist of a keep and six large hollow towers or bastions. The principal entrance was between two round towers. The castle was originally defended on all sides by water; namely, by a moat on the east, west, and south, and by the sea on the north. The great strength of Pevensey has been attested on more than one occasion: we may particularly mention its defence in 1080, by Odo, bishop of Bayeux, then in rebellion against William Rufus, and who held out for six weeks in spite of the determined assaults of the latter: famine at last compelled a surrender. It is worthy of note that the earliest portions of Pevensey are in the best preservation.

It is generally considered by the English historians that Harold's body was given up to his mother, and deposited in Waltham abbey;* but there is a story mentioned by some of the old chroniclers to the effect that Harold escaped from the battle, and lived for some years afterwards as an anchorite in a cell near St. John's church, Chester; a fiction truly ridiculous taken in connection with the character and position of the Saxon king. Subsequent events proved with what difficulty the sturdy Saxon spirit was subdued even after the battle of Hastings, and *without* Harold or any leader who could unite all the strength of the country: what might not have been done *with* him? Whilst on the other hand, William losing, as he did, in that very battle one-fourth of his army, must have been ruined by two or three more of such victories! A much more probable relation as to the disposal of Harold's body is given by William of Poictiers, a trustworthy writer. He states that although the weight of the corpse in gold was offered (a sum that has been calculated at eleven thousand guineas), the Conqueror gave a stern refusal, and ordered it to be buried on the beach, adding with a sneer, that must indeed have been bitter to every English ear, as satirising but too justly the neglect that had led to all their misfortunes, "He guarded the coast while he was alive; let him continue to guard it after death!"

* See vol. ix., p. 201, of this publication.

INFLUENCE OF THE ORIENTAL CHARACTER ON COMMERCE

[From Dr. Bowring's 'Report on the Commercial Statistics of Syria.']

There is in the inertness of Oriental character a great impediment to commercial development. The habits of the people are opposed to activity, and the motives which elsewhere lead to the gradual, however slow, accumulation of property, are faint and insufficient; for the rights of property are but vaguely recognised, and a continuity of effort, in any case whatever, is of very rare occurrence. The examples are few in which opulence is reached by a continuous dedication of energy and attention to a given end. Most of the wealth possessed by the Mussulmans has been the result of conquest—of the power of oppression, or of some fortuitous and accidental circumstances. It rarely happens that either agriculture or manufacture or commerce is the source of a Mohammedan's opulence. Slow and careful accumulation is a rare virtue in the East. Where fortune visits, her visits are sudden and liberal; but as everything is held by a slight and uncertain tenure, the possession of one day is succeeded by the poverty of the next; and if there be, as there almost universally is, a want of those untired exertions by which, in Christian nations, men so frequently amass riches, still more is there a want of that prudence and foresight which check the march of destruction. No element in the Mussulman character is more opposed to the sound commercial principle than their indifference to the progress of decay, their unwillingness to repair the ravages of time. If an edifice be shaken by an earthquake, it is abandoned—it is seldom or never raised again on its foundations—that which is overthrown is never rescued or renovated. A ruined building, like a felled oak, remains in the dust for ever. Even in the populous parts of some of the great cities of Syria, the heaps of ruins which have been left in the pathways by successive earthquakes have not been removed. A few hours' labour would clear the wrecks away; but the passengers prefer to clamber up and down the piles of stones and fragments rather than to displace them. So little disposition is there to alter or to interfere with what has been, that we found the apartments of the castle of Aleppo in precisely the state in which they were abandoned to the conquerors; the halls strewed with armour, covered with broken bows, quivers, and arrows, in tens of thousands, and numberless dispatches with the sultan's signet still scattered about the floor. Added to these obstacles, and operating in the same direction, the unchangeableness of the Mohammedan usages and institutions is an almost invariable impediment to the development of commercial prosperity. The merchant is rarely an honoured being. Those who wield the power of the sword and the authority of *the Book*, the warrior and

the ulema, are the two really distinguished races of society. All productive labour, all usefully employed capital, is regarded as belonging to something mean and secondary. In the ports of Syria, the presence of Europeans has modified to some extent the commercial usages of the country; but in the towns of the interior, in the great depôts, the bazaars represent the same system of commerce which existed many hundred years ago. Huge khans receive the foreign merchants who come with caravans from remote regions, and carry on their trades, both of sale and purchase, precisely as it was conducted by their forefathers. The bazaars are divided into different regions, such as those of the druggists, of spice-men, of the woollen-drapers, of the silk-merchants, of the traders in cotton goods, the shoemaker, the garment-seller, the ironmongers, and a variety of others. Each generally has a separate street for its particular department, and the sale and purchase of goods are carried on with considerable formality. The buyer goes to the shop of the seller, is treated to coffee and a pipe, and he then discusses the merits and the price of the merchandise in which he trades. The bargain is generally of slow arrangement. Independently of the bazaars, there are certain days on which auctions are held, and all sorts of goods are paraded up and down for public sale. But notwithstanding all impediments and difficulties, wherever repose and peace have allowed the capabilities of Syria to develop themselves, production and commerce have taken rapid strides. One of the immediate consequences of Ibrahim Pasha's conquest was a sense of security, the establishment of an improved police, and an immediate extension of trading relations, principally due to the presence of Europeans. When the policy of peace was interrupted, commercial intercourse was deranged, the amount of imports and exports diminished, the number of merchants from foreign countries sensibly lessened, and the hopes of progressive improvement were all checked and disappointed. But both for agriculture and manufactures Syria has great capabilities. Were fiscal exactions checked and regulated—could labour pursue its peaceful vocations—were the aptitudes which the country and its inhabitants present for the development of industry called into play—the whole face of the land would soon be changed. It appeared to me that there was a great disposition to activity among large bodies of the peasantry, and much skill among the manufacturing labourers of the towns. There would, if properly encouraged, be no want of demand for European articles, nor of the means of paying for them; and among the articles most required, those furnished by British industry are particularly prominent. But the articles for which the sale would be most likely to extend are such as, having undergone a process of manufacture as raw materials, lend themselves to further and final manufacture, such as iron, copper, and tin plates, for the making of sundry vessels, threads and yarns of silk, flax, woollen, and cotton, &c. These and other such would be suited by Oriental skill to Oriental tastes better than English ignorance of those tastes could possibly fashion them. I noticed a reflux of opinion favourable to the manufactures of the country, they having already greatly benefited by the import of the half-wrought materials to which I have been referring; for in the finishing of most articles the Syrians are not wanting in dexterity or experience; they have, like all Orientals, a pretty accurate sense of the beauty and arrangement of forms and colours; the patterns they work, though not very varied, are generally graceful; their dyeing is excellent; their artisans are dexterous and intelligent. They use, for the most part, a rude machinery, but their wages are high enough to keep them in tolerable condition; and were some of the modern improvements, such as the Jacquard loom, introduced, there would be a revival of manufacturing prosperity.

Hunting Ostriches and Wild Horses.—We had taken three brace of birds, when, an ostrich starting before us, Candioti, Jun., gave the war-whoop of pursuit to his Gaucho followers, and to me the well-known intimation of "Vamos, Senor Don Juan." Off went, or rather flew, the Gauchos; my steed bounded away in their company, and we were now, instead of tracking an invisible bird through tufted grass, in full cry after the nimble, conspicuous, and athletic ostrich. With crest erect, and angry eye, towering above all herbage, our game flew from us, by the combined aid of wings and limbs, at the rate of sixteen miles an hour. The chase lasted half that time; when an Indian peon, starting ahead of the close phalanx of his mounted competitors, whirled his bolas, with admirable grace and dexterity, around his head, and with deadly aim flung them over the half-running, half-flying, but now devoted ostrich. Irretrievably entangled, down came the giant bird, rolling, fluttering panting; and being in an instant dispatched, the company of the field stripped him of his feathers, stuck them in their girdles, and left the plucked and mangled carcass in the plain, a prey to the vultures, which were already hovering around us. We now came upon an immense herd of wild horses, and Candioti, Jun., said, "Now Senor Don Juan, I must show you how we tame a colt." So saying, the word was given for the pursuit of the herd, and off, once more, like lightning started the Gaucho horsemen, Candioti and myself keeping up with them. The herd consisted of about two thousand horses, neighing and snorting, with ears erect and flowing tails, their manes outspread to the wind, affrighted the moment they were conscious of pursuit. The Gauchos set up their usual cry; the dogs were left in the distance, and it was not till we had followed the flock at full speed, and without a check, for five miles, that the two headmost peons launched their bolas at the horse which each had respectively singled out of the herd. Down to the ground, with frightful somersets, came two gallant colts. The herd continued its headlong flight, leaving behind their two prostrate companions. Upon these the whole band of Gauchos now rushed; lazos were applied to tie their legs; one man held down the head of each horse, and another the hind quarters, while with singular rapidity and dexterity other two Gauchos put the saddles and bridles on their fallen, trembling, and nearly frantic victims. This done, the two men who had brought down the colts bestrode them as they still lay on the ground. In a moment the lazos which bound their legs were loosed, and at the same time a shout from the field so frightened the potros, that up they started on all-fours, but, to their astonishment, each with a rider on his back, riveted, as it were, to the saddle, and controlling them by means of a never-before-dreamed-of bit in his mouth. The animals made a simultaneous and most surprising vault; they reared, plunged, and kicked; now they started off at full gallop, and anon stopped short in their career, with their heads between their legs, endeavouring to throw their riders. "Que esperanza!" "vain hope, indeed!" Immoveable sat the two Tape Indians: they smiled at the unavailing efforts of the turbulent and outrageous animals to unseat them; and in less than an hour from the time of their mounting, it was very evident who were to be the masters. The horses did their very worst, the Indians never lost either the security or the grace of their seats; till, after two hours of the most violent efforts to rid themselves of their burden, the horses were so exhausted, that, drenched in sweat, with gored and palpitating sides, and hanging down their heads, they stood for five minutes together, panting and confounded, but they made not a single effort to move. Then came the Gaucho's turn to exercise his more positive authority. Hitherto he had been entirely upon the defensive. His object was simply to keep his seat and tire out his horse. He now wanted to move it in a given direction, wayward, zigzag; often interrupted was his course at first, still the Gaucho made for a given point; and they advanced towards it, till at the end of about three hours the now mastered animals moved in nearly a direct line, and, in company with the other horses, to the puesto, or small subordinate establishment on the estate to which we were repairing. When we got there, the two horses, which so shortly before had been free as the wind, they tied to a stake of the corral, the slaves of lordly man, and all hope of emancipation was at an end.—*Robertson's Paraguay.*



[The Dutch Housewife.—Maes.]

GRATUITOUS EXHIBITIONS OF PICTURES.

THE NATIONAL GALLERY.

The pictures of the Dutch and Flemish painters in the National Gallery are neither so numerous nor so important as those of the Italian school; although, to judge from the greater attention given to them by the generality of the visitors, they appear to be considered more interesting. Scenes of familiar life are things which everybody can understand, and people who cannot judge whether a picture is well or badly painted, are interested by the subject and the manner in which the artist has treated it.

The rural merrymaking, the social converse by the fireside, the household employments of the females, and the industrial pursuits of the men, were the subjects generally chosen by Teniers, Ostade, and the greater portion of the Dutch painters; those who attempted the higher flights of Rubens, Vandyck, and Rembrandt being comparatively few.

The imaginative minds of the Italian painters, warmed by the remembrance of the great events recorded in the early history of their country,—by the glorious scenery by which they were surrounded,—and by the imposing ceremonies of the religion in which they were educated, attempted the illustration of the holy writings, or endeavoured to represent with the pencil the stories of the great poets which Italy and the neighbouring shores of Greece had given birth to. With their enthusiasm and with such subjects for their pencil, they could not stoop to perpetuate the scenes of every-day life which the Dutch delighted to transfer to their canvas. Of a cold and apathetic temperament, little conversant with the languages or literature of other countries, and having no tales of antiquity or of the deeds of warlike ancestors to prompt them to higher works, they merely looked out of their doors for subjects for their pencil, or availed themselves of the scenes enacted in their own habitations These they worked up with an industry suitable

to the national character, and succeeded, in most cases, in achieving elaborate representations of such scenes, of the faithfulness of which their patrons could well judge.

Nicholas Maes may be reckoned among the more successful of these laborious artists. He was born at Dort, in the year 1632. After studying for some time under Rembrandt, he employed himself in painting small pictures, similar to the one in the National Gallery which we have engraved on the occasion; but not finding such works very profitable, he became a portrait-painter, in which department of art he found considerable encouragement, as his pictures, with much of the force which his study of Rembrandt's management of light and shade enabled him to give, possessed the agreeable quality of softness, the absence of which, in most of his distinguished master's productions, was a cause of much annoyance to the ladies and gentlemen of Holland.

After practising some time in Amsterdam, he paid a visit to Antwerp, for the purpose of studying the works of Rubens and Vandyck. While there he became acquainted with Jordaens, whose pictures he much admired, and whose manner he attempted to imitate. Even in his small cabinet pictures the effect of this imitation may be observed, and in his larger pictures it is more apparent. It is recorded of this artist, that on his first visit to Jordaens, in order to view his pictures, on expressing himself much struck with their beauty, Jordaens, addressing himself to Maes, asked him what were the subjects to which he particularly devoted himself. Maes, in a little confusion, answered, "he was a painter of portraits." To which the other replied, "I pity you most sincerely for being a martyr to that style of painting, where, let your merit be ever so great, you are condemned to suffer the whim, the folly, the impertinence, and the ignorance of such a number of both sexes."

Whether it was this speech which influenced him, or that his own inclinations prompted him to a different line of art, it is certain that we afterwards find him attempting large pictures of domestic scenes, for which, having already achieved a reputation, he found more patronage than at first.

On his return to Amsterdam he was continually employed, and his works considered so estimable, that it was deemed a favour to procure a picture from him. He passed the remainder of his life in Amsterdam, and died at the age of sixty-one, in the year 1693.

The picture we have engraved was painted in the year 1654. It is on wood, and measures thirteen inches and a half high, by eleven inches and a half in width. There is another picture by this master, styled the Cradle, in the Gallery, of about the same size. The subject of the Dutch Housewife needs no explanation, but we may direct attention to the powerful manner in which the bright lights on the figures are made to bring them forward from the dark background, which, although of a very deep colour, is not at all heavy, nor so opaque as the colour used might lead one to expect it would be.

CONTRASTS.

LUNATIC ASYLUMS.

In the history of most great truths calculated to promote the happiness and welfare of society, there are two natural periods—often, unfortunately, widely severed from each other—their discovery, and their practical application; and the character of an æra may, in a great measure, be estimated by the advances made in it through either or both of these stages. The observation, therefore, frequently made, that the present period exhibits a marked deficiency of great men,—who are the discoverers,—may be true (although contemporary opinions on such a matter are but of doubtful value), and still the *period itself be a great one* from the extraordinary energy displayed in it in the carrying out of truths and principles which, though not new, are now for the first time made familiar to the minds of men by their powerful influence on the business and enjoyments of life: *this* characteristic at least our own æra exhibits in the most unmistakeable manner. A single glance at the state of society at present, in comparison with its state at any former time, will satisfy us how much has been recently done in widening its basis and perfecting its structure as the great instrument of human welfare. To illustrate the particular direction and extent of these improvements is the object of the following series of papers; in which we propose to show, by a few striking examples of contrast between what we were and what we are, how *generally* beneficial those improvements have been, how rapid has been their progress of late years, and, judging of the future by the past, how cheering are the prospects before us.

Various particulars connected with the treatment of lunatics in this country two or three hundred years ago, may be obtained from the incidental remarks scattered over the writings of the authors of the period. In Shakspere there are many allusions of this kind. Thus we find that when Antipholus, in the 'Comedy of Errors,' is supposed to be mad, he is "bound" and thrown into "a dark and dankish vault." In 'As you like it,'* again, Rosaline says to her lover, "Love is merely a madness, and deserves as well a dark house and a whip as madmen do." So that at this period bonds, darkness, and flagellation were the matter-of-course remedies for lunatics! We learn also that lunatics whose malady was found to be unattended with danger to those around them, were permitted to leave the hospital with an iron ring soldered about their left arm, as a mark of their condition, and the permission accorded to them to beg. Of the wretched moral and physical condition of these outcasts, Shakspere has put a striking description in the mouth of Edgar,† who, threatened with certain danger, says:—

> "While I may scape
> I will preserve myself; and am bethought
> To take the basest and most poorest shape,
> That ever penury, in contempt of man,
> Brought near to beast: my face I'll grime with filth;
> Blanket my loins; elf all my hair in knots;
> And with presented nakedness outface
> The winds and persecutions of the sky.
> The country gives me proof and precedent
> Of *Bedlam beggars*, who, with roaring voices,
> Strike in their numb'd and mortified bare arms
> Pins, wooden pricks, nails, sprigs of rosemary;
> And with this horrible object, from low farms,
> Poor pelting villages, sheep-cotes and mills,
> Sometime with lunatic bans, sometime with prayers,
> Enforce their charity."

At a later period, Hogarth's print, the last of the famous series of the 'Rake's Progress,' shows us that no particular amelioration had taken place: more or less of nakedness, dark cells, chains, straw, and an utter recklessness as to the fitness of the patients for each other's society, appear as the chief characteristics of the mode of treatment then in force. Quiet, melancholy, violent, and frenzied patients, there appear mingled together; a circumstance enough of itself to make a sane man insane, were he thrown into such horrible companionship: is it probable that to those already mad the consequence would be less injurious?

But although we have thought that these isolated

* Act iii., sc. 3. † 'Lear,' act ii., sc. 3.

indications of the former method of managing lunatics would not be without interest for our readers, and have consequently included them in our paper, they are not at all necessary for the filling up of the contrasts we have alluded to: unfortunately the same state of things existed down to the present century! In 1807, Sir G. O. Paul, writing to the Secretary of State on the subject of pauper-lunatics in the country, remarks: "I believe there is hardly a parish of any considerable extent in which there may not be found some unfortunate creature of this description, who, if his ill treatment has made him phrenetic, is chained in the cellar or garret of a workhouse, fastened to the leg of a table, tied to a post in an outhouse, or perhaps shut up in an uninhabited ruin [the writer adds in a note, he had witnessed each of these methods], or if his lunacy be inoffensive, left to ramble half naked or half starved through the streets or highways, teased by the scoff and jest of all that is vulgar, ignorant, and unfeeling." But, it may be observed, these unhappy creatures were *not* in any of the public asylums, and that the treatment *there* would be very different. Let us see. Eight or nine years later, a magistrate gave the following evidence, before a parliamentary committee, respecting York Asylum:—"Having suspicions in my mind that there were some parts of that Asylum which had not been seen, I went early in the morning determined to examine every place; after ordering a great number of doors to be opened, I came to one which was in a retired situation in the kitchen apartments, and which was almost hid by the opening of a door in the passage: I ordered this door to be opened; the keepers hesitated, and said the apartment belonged to the women, and they had not the key; I ordered them to get the key, but it was said to be mislaid, and not to be found at the moment; upon this I grew angry, and told them I insisted upon its being found, and that if they would not find it, I could find a key at the kitchen fire-side, namely the poker; upon that the key was immediately brought. When the door was opened, I went into the passage, and I found four cells, I think, of about eight feet square, in a very horrid and filthy situation . . . ." &c., &c.:* the particulars are too disgusting for further detail. Up stairs he found a room twelve feet by seven feet ten inches, containing thirteen women, who at night had no other habitation than the cells described. That the responsible parties may have all the benefit of their defence, we may add that the "arrangements" were stated to have been only temporary, and necessitated by a recent fire. It was also stated in evidence, that in the same Asylum patients had been whipped, kept generally in a filthy state, treated with every kind of personal indignity, shut up naked in dark cells, and money obtained by the keepers for necessary clothing. There appeared also but too much reason to suppose that patients had died from neglect or ill treatment. There was one statement made in connection with this institution, which alone suffices to explain all these evils;—the physician was in effect "the sole physician, sole visitor, and sole committee,—and had the whole management of the institution for many years." Of course we here refer to the system, not to any particular individual.

We now turn to the Metropolitan institutions; and at St. Luke's Hospital, certainly, at the same period, some improvement was visible; though the institution was far, very far from being what it might have been even then. But at Bedlam, again, it was proved before the committee that a great number of the patients were closely chained to the wall, and occasionally handcuffed besides; that they were left in that state with no other covering than an unfastened blanket; that the patients in the cells were obliged in winter to shut out what little light the narrow window afforded, on account of the cold—the windows being unglazed, &c. But there is one case which shows, as well as a thousand could do, the spirit of the system pursued at Bedlam up to 1815! In consequence of attempting to defend himself from what he conceived to be unjust treatment on the part of the keeper, William Norris, a patient, was fastened by a long chain, which, passing through a partition, the keeper by going into an adjoining cell could draw him close to the wall at his pleasure. Norris, however, managed to muffle the chain with straw from the bed on which he lay, so as to prevent it being drawn through the partition. Then, with the concurrence of the medical authorities, the following proceedings took place:—a stout iron ring was riveted round his neck, from which a short chain, about twelve inches long, passed to a ring made to slide up and down an upright massy iron bar, six feet high, fixed in the wall. Round his body a strong iron bar, about two inches wide, was riveted; on each side of this bar or hoop was a circular projection, which, being fashioned to and enclosing each of his arms, pinioned them close to his sides. From this waist-bar two others passed over his shoulders, and were riveted to the first, both before and behind. The iron ring round his shoulders was connected by a double link with the shoulder-bars. From each of these bars passed another small chain to the sliding ring on the iron bar. This complicated machinery being upon the unfortunate man, he could only lie on his back in bed, or, keeping close to the wall, raise himself to an erect posture: not a step forwards could he make, nor could he lie on either side on account of the projections enclosing his arms. In this state was Norris found on the 2nd of May, 1815, by several gentlemen, and in this state had he lived for nine years! He was released, but lived only to the following year; though that was long enough to show the falsity or error of the allegations as to his ferocious violence made to excuse such treatment.

This is one side of the picture—a dark and melancholy one indeed. Turn we now to the other.

Passing with brief but grateful mention the labours of Pinel in France and of the Quakers (at their Retreat near York) in England, who appear to have been the first in their respective countries to set the example of a more humane and enlightened mode of treatment, we proceed to see what is the system now in operation, for which purpose we take the Pauper Lunatic Asylum at Hanwell: not that the institutions before mentioned would not of themselves present a satisfactory contrast to their former state, but that on the whole the principles of the new system appear to have been carried farther in Hanwell than in them.

We will suppose a patient is about to enter Hanwell full of the alarm which the idea of confinement excites in lunatics as well as in other people. On his approach he sees a large and cheerful-looking house, standing on the slope of an eminence in the midst of its own pleasant grounds. In passing through the latter, he sees various persons in the same condition as himself busily employed in digging or raking the soil, trimming the plants, &c. On entering the building, the Principal questions both the patient and his friends as to his malady, conduct, tendencies, &c., in order that he may place him in the ward occupied by persons whose state assimilates most nearly to his own. He is then stripped, thoroughly cleaned, and the comfortable dress of the asylum is put on. He is now examined by the house surgeon, and, if necessary, by the physician, with a view to medical treatment.

* Statement made by Godfrey Higgins, Esq., to the Select Committee of 1814-15.

If the lunacy be of recent origin, the cure is generally speedy, and tolerably certain: (90 out of 100 of such persons, for instance, are cured at Hanwell;) but if the disease has been of long duration, so also will be the cure. The patient is next invited to set himself at work, and become in every respect a member of the family. He is shown the bricklayers, joiners, tinners, blacksmiths, shoemakers, tailors, brush, twine, bottle, and basket makers, coopers, &c., all busy in their workshops. If he can render no assistance to any of these, there are the gardens and the farm, where he is sure to be found useful. Perhaps he is idle or perverse, and will not work: well, there is no preventing such things; and it must be frankly owned, that at Hanwell, Dr. Ellis, its late manager, himself confesses it is necessary sometimes to resort to the extreme measure of—violence? oh, no!—but the bribe of a little tobacco, beer, or tea, or some other much-thought-of luxury, and that soon induces a change of resolution. And thus it is, we may observe by the way, that out of 612 patients at Hanwell in a recent year, 452 were daily employed, and the remainder were mostly fatuous, or too feeble for any occupation. Well, the patient finds himself in a new and strange scene; but the attention paid to his comforts soon reconciles him to it. The rooms in which he sleeps, eats, or works are light, airy, warm, and comfortable; he sees the surgeon and physician of the institution making their daily rounds to inquire into the health and comfort of him and his companions; if he is at work out of doors, a draught of beer is brought to him between breakfast and dinner, and again between dinner and supper; he is invariably spoken to kindly; his self-respect is never heedlessly, much less intentionally wounded; in his leisure hours there are chess, draughts, &c. for his amusement, also a library,* with its Penny and Saturday Magazines, its books of voyages and travels and of interesting biography: a concert, assisted by an excellent organ (purchased from the funds of the bazaar established by Mrs. Ellis among the female patients with the happiest results), takes place once a week, and he assists in the preliminary arrangements as to the choice of tunes, &c.; and even on Sunday, the day on which the patients are most uncomfortable and difficult to manage, from the absence of the usual employment, there is the afternoon singing meeting, where all the inmates of the asylum learn, or at least endeavour to do so, the hymns and psalms that are to form part of the evening service: and lastly, there is that service itself, which is most anxiously anticipated; "indeed, there is as much anxiety," says Dr. Ellis, in his work on insanity, "amongst the patients to be permitted to attend and to come in their best dresses, as there is amongst the sane, previous to an attendance on the most fashionable congregation in London, and it would be difficult to find in the metropolis one more orderly or devout." But supposing our patient to exhibit a savage violence of temper or mood, must not the old mode of confinement, darkness and chains, be then resorted to? Let Miss Martineau, who visited Hanwell in 1834, answer. She states, that out of 566 patients then in the house, 10 only were restrained, and the restraint was simply the confinement of their arms as they walked about among the other patients. But we must not suppose there are no other modes of restraint, though that we are about to mention will not injure the reputation of Hanwell for humanity. "'Oh, do let me out, do let me go to my dinner!' wailed one in her chamber who had been sent there because she was not 'well enough' for society in the morning. The dinner-bell had made her wish herself back again among her companions. 'Let me out, and I will be quiet and gentle.' 'Will you?' was the only answer when her doors were thrown open. In an instant she dispersed her tears, composed her face, and walked away like a chidden child."* Mr. Hill, late of the Lincoln Lunatic Asylum, recommending treatment of a similar kind in cases of violence, says, "a maniac is seldom known to break his word." Our patient has thus perhaps ultimately recovered; on quitting the Asylum its parting care for his welfare is manifested in the pecuniary assistance rendered to him (from a fund specially provided, called "the Adelaide Fund") to continue him a little longer in the enjoyment of the comforts he cannot yet be safely without, and keep his mind easy whilst he seeks employment or resumes his natural position.

* For which the institution is mainly indebted to Mr. J. Gurney.

Since the retirement of Sir W. Ellis, Dr. Conolly has been the resident physician; and under that gentleman's management still further advances have been made. Thus, during the past year, in which 1108 patients have been treated, there has not been a single instance of personal restraint. Even severity of tone has almost ceased to be employed in the repression of violence, except in very peculiar cases. Among the minor improvements that have taken place within the same period are a more generous system of diet, more comfortable clothing, better ventilation, the throwing down of some of the gloomy walls dividing the airing courts and erecting open railings in their place, the laying out of the courts as gardens, &c.

As it is rather the spirit than the practical details of the past and present modes of treating lunatics that we deem important, it does not appear necessary to add anything to the foregoing remarks on Hanwell to show its contrast with the state of things that prevailed only five-and-twenty years ago. But with respect to the important matter of restraint, we cannot avoid noticing that Mr. Hill was the first to contend that *no* personal restraint, such as that implied by the use of bands, belts, &c., was necessary; and, startling as the opinion was, he unquestionably reduced his theory to practice in the Lincoln Asylum for the space of two or three years without a single accident. "It may be demanded," he remarks, "what mode of treatment do you adopt in place of restraint? How do you guard against accidents? How do you provide for the safety of the attendants? In short, what is the substitute for coercion? The answer may be summed up in few words, viz.—classification, watchfulness, vigilant and unceasing attendance by day and night, kindness, occupation and attention to health, cleanliness and comfort, and the total absence of every description of other occupation of the attendants."†

In conclusion then, we have in the one case darkness, chains, and whips, cold, nakedness, and filth, contempt, neglect, utter solitude, or a still more mischievous society, and all generally ending in a deeper, and more confirmed, and more dreadful phase of the disease, if the unfortunates are not in the mean time cut off by a premature death; in the other we have the opposites of all these: the first faithfully depicts the characteristics of asylums as they were; the second as faithfully what the best of them now are, and what the others, we may safely prophesy, will soon become.

We are often infinitely mistaken, and take the falsest measures, when we envy the happiness of rich and great men: we know not the inward canker that eats out all their joy and delight, and makes them really much more miserable than ourselves.—*Bishop Hall.*

* Miss Martineau's account of Hanwell.—Tait's Magazine, 1834.

† Hill on Lunatic Asylums.





THE CID.—No. II.

"Vengeance is secure to him
Who doth arm himself with right."
Romances of the Cid.

Rodrigo (or, as he is commonly called, Ruy) Diaz de Bivar, the Cid, was born at Burgos in the year 1025. At that period the greater part of the Peninsula was in the hands of the Arabs, who had invaded it more than three centuries before. The handful of Goths who had remained unconquered among the mountains of the Asturias, had, by gradual inroads upon the Moslem territory, so extended their dominion as by this time to have regained possession of the north-western quarter of the Peninsula, *i.e.* Galicia, the Asturias, Leon, Old Castile, the northern half of Portugal, Biscay, and Navarre, beside part of the provinces of Aragon and Catalonia. This territory was divided into several petty kingdoms or counties, the principal of which, soon after the birth of Ruy Diaz, were united under the authority of Fernando I., founder of the Castilian monarchy. The rest of the Peninsula, which for three centuries after the conquest had been subject to the Arabian khalifs of Cordoba, was also, at the period we treat of, divided into a number of petty states, governed by independent sovereigns. Having thus premised, we return to our hero.

The father of Rodrigo was Don Diego Lainez, the representative of an "ancient, wealthy, and noble race," claiming his descent fourth from Lain Calvo, one of the two nobles elected by the Castilians in the preceding century to the supreme power under the name of "Judges of Castile"—a title, says the historian Mariana, preferred to all others, as that which could least easily be made available for attacks on popular liberty, of which the Spaniards of those days were extremely jealous. That Lain Calvo was a great man in his day is evident from the pride with which the Cid claims him as a forefather; and we have ourselves seen on the great gate of Santa Maria at Burgos a statue to his honour, with an inscription styling him "a most brave citizen, the sword and buckler of the city." Of the mother of the Cid the romances make no mention, but on her tomb in the monastery of San Pedro de Cardeña near Burgos, she is called "Doña Teresa, daughter of the Count Don Nuño Alvarez"—a fact of importance, inasmuch as it shows the pedigree of the Cid to have been noble on both sides.

When Rodrigo was a mere stripling, his father Diego Lainez was grossly insulted by the haughty and powerful Count of Gormaz, Don Lozano Gomez, who dared even to smite him in the presence of the king and his court. The romances picture the consequent deep dejection of the worthy hidalgo, who, on account of his

great age, despaired of obtaining vengeance of his powerful foe, and sat gloomily brooding over his disgrace:

"Sleep was banish'd from his eyelids;
Not a mouthful could he taste;
There he sat with downcast visage,—
Direly had he been disgrac'd.

Never stirr'd he from his chamber;
With no friends would he converse,
Lest the breath of his dishonour
Should pollute them with its curse."

At length he called together his sons, and seizing their tender hands—tender, the romance seems to imply, as much on account of their high birth, as of their age—he grasped them so rudely that they cried him mercy. But the hot blood of Rodrigo fired at this treatment, and he fiercely exclaimed—

"Loose me, sire! and ill betide thee!
Curse upon thee!—let me go!
Wert thou other than my father,
Heavens! I would smite thee low!

With this hand thou wring'st I'd tear thee—
Tear thy heart from out thy breast!"

The lad's fury, instead of enraging, cheers and delights the old man, who, with tears of joy, calls him "the son of his soul!" acquaints him with the indignity done him, gives him his blessing and sword, and entrusts him with the execution of his vengeance, as the only one of his kindred worthy of such an emprise. The youth joyfully accepts it, and takes leave of his father, praying him to "heed not the wrong, for when the Count insulted him, he knew not of his son."

No light undertaking, however, was this, and so thought Rodrigo, when he called to mind his tender years, and the power of his adversary, whose arm was ever mightiest in the field, whose vote ever first in the councils of the king, and at whose call a thousand brands would flash from the Asturian mountains. Yet all this seemed little in comparison with his father's indignity, the first ever offered to the house of Lain Calvo; and he resolved to risk his life for honour's sake, as became a valiant hidalgo.* Down he takes an old sword with which, in times past, Mudarra, the bold bastard, had taken deadly vengeance on Rodrigo de Lara, who had murdered the seven Infantes his brothers. This sword the young Rodrigo apostrophises ere he girds it on: "Take heed, thou valiant sword, that the arm that wields thee is that of Mudarra. Firm as thine own steel shalt thou behold me in the fight; yea, thy second lord will prove as valiant as thy first. Shouldst thou be overcome through my cowardice, then will I sheathe thee in my bosom up to the cross of thy hilt.† Let us hasten to vengeance—lo! this is the hour to give the Count Lozano the punishment he meriteth."

Having thus exalted his courage, he goes forth and meets the Count; and accuses him of unknightly and cowardly conduct in striking an old man in the face, and that man an hidalgo; reminding him that those who have noble escutcheons cannot brook wrongs:

"How durst thou to smite my father?
Craven caitiff! know that none
Unto him shall do dishonour,
While I live, save God alone.

For this wrong I must have vengeance—
Traitor, here I thee defy!
With thy blood alone my sire
Can wash out his infamy!"

The Count, despising his youth, replies with a sneer,

"Go, rash boy! go, lest I scourge thee—
Scourge thee like an idle page."

Rodrigo, burning with wrath, draws his sword and cries—"Villain, come on! Right and nobility on my side are worth a dozen comrades." They fight—Rodrigo prevails, slays the Count, cuts off his head, and returns with it in triumph to his father's house.

Don Diego was sitting at his board, weeping sorely for his shame, when Rodrigo entered, bearing the bleeding head of the Count by the forelock. Seizing his father's arm, he shook him from his reverie, and said—

"See! I've brought the poisonous weed—
Feed upon it with delight.
Raise thy face, oh, father mine!
Ope thine eyes upon this sight.

Lay aside this grievous sorrow—
Lo! thine honour is secure;
Vengeance hast thou now obtained,
From all stain of shame art pure.

Ne'er again thy foe can harm thee;
All his pride is now laid low;
Vain his hand is now to smite thee,
And this tongue is silent now.

Well have I aveng'd thee, father!
Well have sped me in the fight.
For to him is vengeance certain
Who doth arm himself with right."

The old man answered not, so that his son fancied he was dreaming, but after awhile he raised his head, and with eyes full of tears thus spake:—

"Son of my soul, my brave Rodrigo,
Hide that visage from my sight;
God! my feeble heart is bursting,
So full is it of delight.

Ah! thou caitiff count Lozano!
Heaven hath well aveng'd my wrong;
Right hath nerv'd thine arm, Rodrigo—
Right hath made the feeble strong.

At the chief place of my table,
Sit thee henceforth in my stead;
He who such a head hath brought me,
Of my house shall be the head."

Forth rode Diego Lainez to kiss the hand of "the good king" Ferdinand, with three hundred hidalgos in his train, and among them rode "Rodrigo, the proud Castilian."

"All these knights on mules are mounted—
Ruy a war-horse doth bestride;
All wear gold and silken raiment—
Ruy in mailed steel doth ride;

All are girt with jewell'd faulchions—
Ruy with a gold-hilted brand;
All a pair of wands come bearing—
Ruy a glittering lance in hand;

All wear gloves with perfume scented—
Ruy a mailed gauntlet rude;
All wear caps of gorgeous colours—
Ruy a casque of temper good."

As they ride on towards Burgos, they see the king approaching. His attendants tell him that yonder

* *Hidalgo* is a contraction of *hijo de algo*—literally, son of something.

† It was the custom in the middle ages to make swords with hilts of this form, in order that they might answer the purposes of religion as well as of destruction. When a knight fell on the field of battle, the hilt of his sword was held to his lips instead of a crucifix, and in his last moments he was comforted and cheered by this emblem of his faith. We have seen in the Royal Armoury at Madrid a number of swords purporting to have belonged to the earliest heroes of Christian Spain, most of which have cruciform hilts.

band is led by him who slew the Count Lozano. When Rodrigo drew near, and heard them thus conversing, he fixed his eyes steadfastly upon them, and exclaimed with a loud and haughty voice—

"Is there 'mong ye of his kindred
One to whom the Count was dear,
Who doth for his death seek vengeance?
Lo! I wait his challenge here.
Let him come, on foot—on horseback;
Here I stand—his enemy."

The courtiers, however, were awed by the youth's boldness and impetuosity, and

"With one voice they all exclaimed,
Let the foul fiend challenge thee!"

Diego Lainez and all his followers then dismounted to kiss the king's hand; Rodrigo alone sat still on his steed. His father, vexed at this, called to him—

"Come, my son, dismount, I pray thee;
Kneel, the king's right hand to kiss;
Thou his vassal art, Rodrigo,—
He thy lord and master is."

The proud spirit of the youth could not brook to be thus reminded of his inferiority; "he felt himself much aggrieved," and fiercely cried—

"Had another such words utter'd,
Sorely had he rued the day;
But sith it is thou, my father,
I thy bidding will obey."

As he knelt accordingly to do homage to the king, his sword flew half out of its scabbard, which so alarmed the monarch, who knew the fierceness of the young hero, that he cried—"Out with thee! stand back, Rodrigo! away from me, thou devil! Thou hast the shape of a man, but the air of a furious lion." Rodrigo sprang to his feet, called for his horse, and angrily replied—

"Troth! no honour do I count it,
Thus to stoop and kiss thy hand;
And my sire, in that he kiss'd it,
Hath disgrac'd me in the land."

With these words he leaped into the saddle, and rode away with his three hundred followers.



["Troth! no honour do I count it"]

WHAT CONSTITUTES A STEAM-ENGINE?

It is a natural result of the complexity in the construction of most steam-engines, that wheels and axles, cranks and levers appear, to uninitiated persons, as inseparable or indispensable portions of the machine, and that the principles of the steam-engine are necessarily complicated. Such, however, is not exactly the case: the principle by which the steam-engine becomes a moving force is beautifully simple; and the complexity arises chiefly in the mode of applying that force to any particular purpose. A steam-boat passenger, seeing and hearing the paddle-wheels revolve may imagine that the steam drives them round, and may then wonder what purpose all the complicated machinery beneath the deck is intended to answer. So in like manner may a railroad passenger have an indistinct notion that steam acts upon the wheels of the locomotive engines, so as to cause them to revolve, but is unable to dive into the mystery of cranks, pistons, and valves, or to divine in what way they are connected with the action of the steam. Without venturing to enter at any considerable length upon so extensive a subject as the variety and application of the steam-engine, we will endeavour so far to disentangle the principle from the details as to show what really constitutes a steam-engine, apart from any particular purpose to which it may be applied. When this is done, we shall be in a condition to answer the questions,—"How does a steam-vessel move?" and "How does a steam-carriage move?"

That ice, water, and steam are convertible substances, every one knows, and it is also pretty generally

known that heat is the agent by which the conversion from one state to another is effected. But it is not so well known that the difference of bulk between a given weight of water and of steam is the true cause of the power of the steam-engine. A cubic inch of water, weighing about two hundred and fifty-two grains, may be converted into an equal weight of steam but in the act of transformation it increases in bulk more than seventeen hundred times, whereby a cubic inch of water becomes nearly a cubic foot of steam. How this extensive increase of bulk is brought about, we are but little able to say; all which is positively known in the matter being, that a large amount of heat is taken up or absorbed during the process. A cubic inch of water at 212° may be converted into a cubic foot of steam at 212°: yet, although the thermometer indicates the same temperature in both, so large a quantity of heat has been absorbed by the steam as would suffice to raise one thousand inches of water one degree in temperature. As this large amount of absorbed heat is not perceptible by the usual test (the thermometer), it is called *latent* or hidden heat.

But the expansion of an inch of water into a foot of steam would be of little use to the engineer, unless there were means of effecting the subsequent reduction of the steam, and thereby producing a reaction. This reduction is effected by cold, which robs the steam of so much latent heat as to render it incapable of maintaining the vaporic form, and it thence reassumes the form of water.

These properties of steam, and many others of equal importance, were developed in successive ages, and by different philosophers; and the manner in which they may be made available as mechanical agents will, perhaps, be understood from the following notice of Newcomen's steam-engine, one of the early forms of engine:—A metallic boiler is half-full of water, and is placed over a furnace or fire, the heat of which converts the water in the boiler into steam. The boiler is closed in on all sides, but it has a little aperture, covered with a valve or plug, which is opened by the force of the steam when its expansive power exceeds the pressure of the valve. A pipe conveys the steam from the boiler to an upright cylinder or barrel, in which a solid piston or plug works up and down. The top of the piston is exposed to the open air, while the bottom is wholly excluded from atmospheric action. Now the air presses on all bodies at the earth's surface with a force of about fifteen pounds per square inch, and the piston is pressed downwards in the cylinder by this force. In order, therefore, to drive the piston upwards, steam is admitted beneath it; and this steam must be raised to a high temperature,—greater that 212°,—in order that its pressing, expanding, or elastic force may be more than a balance for that of the atmosphere. The steam, then, drives up the piston; but how is it again to descend, so long as the steam remains beneath it? To effect this a jet of cold water is thrown into the cylinder beneath the piston, and robs the steam of so much heat as to render it incapable of maintaining the vaporic form: it condenses into drops of water, which, occupying only one seventeen-hundredth of their former bulk, leave an extensive vacuum in the cylinder. The external air has now power to act unresisted, and it depresses the piston. A new admission of steam into the cylinder again forces up the piston; and a new injection of water condenses the steam, produces a partial vacuum, and causes the descent of the piston.

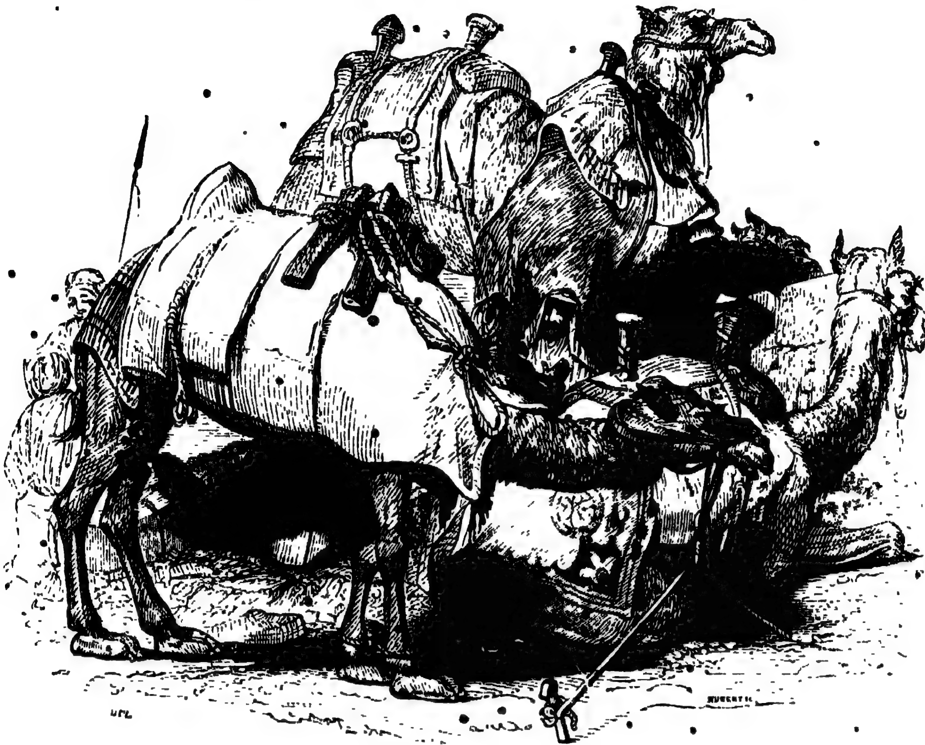
Now it is easy to see what constitutes the principle of such an engine as this, and what are merely subsidiary details. The external air tends to press down the piston in the cylinder, and we have to employ an antagonist force which shall be alternately greater and smaller than this pressure. This antagonist force is steam at a temperature greater than 212°, and the same steam converted into water, thereby leaving a vacuum beneath the piston. The arrangement of the fire-grate and flues, so as to impart the greatest amount of heat, the shape of the boiler, and the introduction into it of a safety-valve and of gauge-pipes, to indicate the quantity of water and the temperature of the steam, the arrangement of the pipe and valves which admit steam from the boiler to the cylinder, the mode of injecting the water beneath the piston and of carrying away the injected water before new steam is admitted, and the mode in which the vertical motion of the piston is, by the aid of rods, beams, levers, wheels, &c., made available as a mechanical agent, are matters of detail which do not touch upon the great principle of the machine.

James Watt, besides practically demonstrating many of the properties of steam indicated above, introduced a vast number of improvements in every part of the machine; and we may now briefly show how the great principle of the steam-engine has been brought into play by these improvements. The furnace and boiler are so admirably arranged, that when the fire is too strong, a damper is, by the action of the engine itself, drawn across the flue, to lower the draught; and when the water in the boiler is too low, a valve opens, and more water flows in. Steam being produced, it is carried along a pipe to the cylinder, and in so doing, it passes through a valve so contrived as to regulate the quantity of steam admitted according to the amount of power required. The cylinder is not open at the top, as Newcomen's, but is enclosed on all sides, having an internal piston, wholly shielded from the external air. The downward pressure of the air is therefore here lost, but, in lieu of it, steam is admitted above the piston as well as below, but not at the same time. Newcomen's cylinder was partially cooled before each downward stroke of the piston by the jet of cold water; but Watt's cylinder must be kept constantly warm, and the condensation of the steam is effected, therefore, in a separate cylinder, kept in a cistern of cold water. Let us suppose that steam admitted above the piston presses it down; a valve is then opened, by which the steam is conducted to the condenser, and instantly cooled, by which a vacuum is formed above the piston. Meanwhile steam is being admitted below the piston, and as the latter has now a vacuum above it, it is forced upwards by the pressure from beneath. The communication between the condenser and the upper part of the cylinder is then cut off, and another opened with the lower part, whereby another series of changes occur, the steam driving the piston upwards and downwards alternately.

We are now in a condition to understand a point which frequently occasions much perplexity; viz., how a steam-engine can do so many different sorts of work: drain a mine, or spin a skein of thread, or stamp the device on a coin, or make a pin's head. The explanation lies within a small compass. To the piston of every steam-engine is attached a metallic rod, which shares the reciprocating motion given to the piston. The "stroke," or distance traversed by the piston, frequently amounts to several feet; and any machinery attached to the remote end of the piston-rod is thus moved to and fro through an equal space with great rapidity. This motion being produced, there are abundant means of giving a *circular* direction to it: let any one witness the mode in which the itinerant knife-grinder produces a circular motion of the wheel by the vertical motion of the treadle and strap, and he will have a more distinct idea than words can give of one such means. The circular motion is, in most applications of the steam-engine, first given to a large heavy "fly-wheel;"

and this fly-wheel may be considered as occupying the point of connection between the *production* and the *consumption* of steam-power. All the complex arrangements relating to the production and management of the steam have performed their wonted part when the fly-wheel is set in motion; and we may dismiss the steam-engine from this point, and regard the fly-wheel as a mighty workman, whose labours may be directed to the roughest as well as to the most delicate operations,—to the production of a cotton gown, a shilling, a Penny Magazine; a workman to whom small things cease to be small, and great things cease to be great.

[To be continued.]



THE CAMEL.

In the second volume of the 'Penny Magazine' is a general account of the Arabian camel. Since that article was published, many interesting particulars of this most useful animal have been furnished by recent travellers; and many erroneous impressions have thus been removed. A very complete account of the camel, with reference to its frequent mention in the Scriptures, and its use by the inhabitants of the Holy Land, is given in the 'Pictorial History of Palestine,' by Mr. Kitto, whose original contributions to our little publication have often added greatly to its interest and value. From this source we abridge a few particulars of the habits of "the ship of the desert."

The country most rich and abundant in camels is undoubtedly the province of Nejed in Arabia, entitled on that account *Om el Bel*, or Mother of Camels. It furnishes Syria, Hedjaz, and Yemen with camels, which in those countries become worth double the price originally paid for them in Nejed. The Turkmans and Kourds of Anatolia purchase yearly from 8000 to 10,000 camels in the Syrian deserts, of which the greater number are brought there from Nejed. But it is the camel of Oman which is celebrated in the songs of Arabia, as the fleetest and most beautiful; and, in fact, the legs of the Oman camels are more slender and straight, their eyes more prominent and sparkling, and their whole appearance denotes them of higher lineage than the ordinary breeds of this animal. In mountainous countries camels are scarce certainly: but it is a mistaken impression that camels are not capable of ascending hills; for, provided they are rough, they can ascend the steepest and most rugged paths with as much facility as mules. The feet are large and spreading, and covered at the lower part with a rough flexible skin. It is an erroneous opinion that the camel delights in sandy ground. It is true that he crosses it with less difficulty than any other animal: but wherever the sands are deep, the weight of himself and his load makes his feet sink into the sand at every step, and he groans and often sinks under his burden. Hence the skeletons of camels are found in the greatest numbers where the sands are the deepest. The soil best adapted to their feet, and which they traverse with the most facility, is that of which the desert is usually composed, a dry and hard but fine gravelly plain.

In years of scarcity the camel is always barren. If the birth of a camel, as is often the case, happens on a journey, the Bedouin receives it in his arms, and places it for a few hours on the back of its mother. But at the first halting-place the little stranger is put down to receive the parent's caresses, and always after it continues to follow her footsteps unassisted. At the beginning of the second year the young camels are weaned; in the fourth year they begin to breed.

Accustomed even from its birth to long and toilsome journeys, little training is necessary, beyond proportioning the weight to its tender age, to inure them to the carrying of burdens; and they voluntarily kneel when about to be loaded for a journey, a position which their great height renders necessary. Kneeling is their natural state of rest, but when heavily laden on flinty

or stony ground, it cannot be accomplished without pain. They then drop at once on both front knees, and, in order to establish room for their hinder legs, are compelled, in that condition and whilst encumbered with the whole weight of the burden, to plough them forward. The callosities on their joints, although nearly of a horny nature in the aged camels, seem insufficient to defend them, and it is impossible for the European to view the act without commiseration. In consequence of this the Bedouins never make them kneel to mount themselves, but either cause the animal to drop his neck to receive their foot, and on their raising it the rider is enabled to gain his seat, or they climb up behind; it pleases them much when a stranger can accomplish either of these feats.

The distinction between the Camel and the Dromedary is not that the former has two humps and the latter but one, as very frequently has been stated, and very generally believed. Both have but one hump, and the dromedary is distinguished from the camel only by its higher breed and finer qualities—as the high blood race-horse is distinguished from the cart-horse. Whenever an Arab perceives in one of his camels any indication of its being small and active, he trains it for the purpose of riding; and if it be a female, he takes care to match her with a fine high-bred male, whereby the fine dromedary races are improved and perpetuated. These animals, destined exclusively for riding, are called *hedjein* in Egypt, and *deloul* in Arabia. The two-humped camel is the northern or Bactrian camel,—the camel of Central Asia,—and found, by migration with man, in the Crimea, and in the other countries which border the Caucasian Mountains. In South-Western Asia this camel is scarcely known. Stephens* assures us that on the starting of the Mecca caravan he had seen together as many as, perhaps, twenty thousand camels and dromedaries, and had not seen among them more than half a dozen with two humps. Burckhardt also says the Arabs have no dromedaries with two humps, nor did he ever see or hear of any in Syria. It is true that in Anatolia there is a two-humped breed, produced between the two-humped male dromedary brought from the Crimea and a Turkman she-camel. But one of the two small humps which the progeny exhibits is cut off immediately after birth, to render it more fit for bearing a load. The single hump of the Arabian and Syrian camels continues round and fleshy, while the animal is in good condition; but, by a remarkable provision of nature, this excrescence by its gradual absorption supplies the place of other nourishment under circumstances of privation. Few creatures exhibit so rapid a conversion of food into fat as camels. A few days of rest and ample nourishment produce a visible augmentation of flesh: while, on the contrary, a few days employed in travelling without food, reduce the creature almost immediately to little more than a skeleton, excepting the hump, which much longer resists the effects of fatigue.

The first thing, therefore, about which an Arab is solicitous, on commencing a long journey, is the state of his camel's hump. If this is in good condition, he knows that the animal is in a state to endure much fatigue on a very moderate allowance of food, believing that, according to the Arabic saying, "the camel feeds on its own hump." The fact is, that as soon as the hump subsides, the animal begins to desist from exertion, and gradually yield to fatigue. After the creature has in this manner lost its hump, it requires three or four months of repose and copious nourishment to restore it, which, however, does not take place until long after the other parts of the body have been fully replenished with flesh. It is in these facts, which exhibit the hump as a provision of food (so to speak) for the exigencies of protracted travel across the deserts, that we discover the adaptative use of this curious, and, as might seem to the cursory observer, needless excrescence.

The great length of the camel's neck enables the animal, without stopping, to nip the thorny shrubs which everywhere abound on the desert, and, although the spines on some are sufficiently formidable to pierce a thick shoe, the cartilaginous formation of their mouth enables them to feed without difficulty. The Bedouin, also, when walking, devotes a considerable portion of his time in collecting and feeding his camel with the succulent plants and herbs which cross his path. These, on a journey, with a few handfuls of dates or beans, form its ordinary food; but while encamped, he is fed on the green stalk of the jowree, and the leaves and tender branches of the tamarisk, heaped on circular mats, and placed before the camel, who kneels while he is partaking of them. In Southern Arabia they are fed on salt and even fresh fish.

During a journey it is customary to halt about four o'clock, remove the loads, and permit the camels to graze around; if the Arabs are desirous of preventing them from straying too far, they tie their fore legs together, or bind the fetlock to the upper joint by a cord. The head is never secured, excepting whilst travelling, when the Arabs unite them in single file, by fastening the head of one to the tail of his predecessor. Towards evening they are called in for their evening meal, and placed, in a kneeling posture, round the baggage. They do not browse after dark, and seldom attempt to rise, but continue to chew the cud throughout the greater part of the night. If left to themselves, they usually plant their hind-quarters to the wind.

Authorities differ with respect to the camel's capability of enduring thirst. From the data collected by Burckhardt, it appears that the power varies much in the different races of the camel, or rather, according to the habits respecting the exercise of this faculty which have been formed or exacted by the heat or cold, the abundance or paucity of water, and the state of vegetation in the country in which they have been brought up. Thus the camels of Anatolia, during a summer journey, require water every second day, while the camels of Arabia can dispense with it until the fourth, or even the fifth. But then again much depends on the season. In spring, when the herbage is green and succulent, it supplies as much moisture as the animal's stomach requires; at that season, therefore, the journey across the great Syrian desert from Damascus to Baghdad (twenty-five days) may be performed without any water being required by or given to the camels; at that time of the year only, therefore, a route destitute of water can be taken. In summer the route by Palmyra is followed, in which wells of water can be found at certain distances. Burckhardt reckons that, all over Arabia, four entire days constitute the utmost extent to which the camel is capable of enduring thirst in summer. In case of absolute necessity, an Arabian camel may go five days without drinking, but the traveller must never reckon on such an extraordinary circumstance. The animal shows manifest signs of distress after three days of abstinence. The traveller last named throws much discredit on the popular story of the reserved supply of water in the camel's stomach, for the sake of which the animal is said to be often slain by his thirsty master.

Notwithstanding its patience and other admirable qualities, the camel is gifted with but little sagacity; nor does it appear to be capable of forming any strong attachment to its master, although it frequently does so to one of its own kind with which it has long been

* 'Incidents of Travel,' p. 218.

accustomed to travel. In protracted desert journeys the camel appears fully sensible that his safety consists in keeping close to the caravan, for if detained behind, he never ceases making strenuous efforts to regain it.

It is a pity to contradict the pleasing picture which Ali Bey draws of the peaceful dispositions of camels; but the truth must be told, which is, that they are among the most quarrelsome beasts in existence. After the hardest day's journey, no sooner is the baggage removed than the attention of the driver is required to keep them from fighting, as they are prone to give the most ferocious bites and to lacerate each other's ears.

The desert camels, less accustomed to walls and houses than those of Anatolia and Syria, are with difficulty led through the streets of towns when they arrive in caravans; and it being impossible to prevail upon some of the more unruly to enter the gates, it is often found necessary to unload them outside and to transport the bales into the town on asses.

There have been various estimates of the speed of the camel. A sufficient number of authorities are agreed in estimating its ordinary pace at two and a half miles an hour. Calculations made in Syria, Egypt, Arabia, and Turkistan agree in this. This is to be understood as the ordinary pace in long caravan journeys, when the animal only *walks*. The saddle-dromedaries are capable of other things, although it may be noted that the long journeys which it can perform in a comparatively short time, are in general effected less by positive speed than by its very extraordinary powers of sustained exertion, day after day, through a time and space which would ruin any other quadruped. For short distances, the swiftness of a camel makes no approach to that of even a common horse. A forced exertion in galloping the animal cannot sustain above half an hour, and it never produces a degree of speed equal to that of the common horse.

If a camel happens to break a leg, it is immediately killed, as such a fracture is deemed incurable. The camel is laden as it kneels, and although the load is often laid on recent wounds and sores, no degree of pain or want ever induces the generous animal to refuse the load or attempt to cast it off. But it cannot be forced to rise, if from hunger or excessive fatigue its strength has failed; it will not then do this, even without the load. Under such circumstances camels are abandoned to their fate. It is seldom they get on their legs again, although instances have been known where they have done so, and completed a journey of several days. Wellsted tells us he had often passed them when thus abandoned, and remarked the mournful looks with which they gazed on the receding caravan. When the Arab is upbraided with inhumanity, because he does not at once put a period to the animal's sufferings, he answers that the law forbids the taking away of life save for food; and even then, pardon is to be implored for the necessity which compels the act. When death approaches the poor solitary, vultures and other rapacious birds, which espy or scent their prey at an incredible distance, assemble in flocks, and, darting upon the body, commence their repast even before life is extinct. The traveller continually sees remains of this faithful servant of man, exhibiting sometimes the perfect skeleton, covered with a shrunk shrivelled hide, sometimes the bones only, altogether deprived of flesh, and bleached to dazzling whiteness by the scorching rays of a desert sun.

ALEXANDER THE CORRECTOR.

In this quaint and somewhat ambitious designation few of our readers, we presume, will recognise the author of a work widely and honourably known—a work distinguished for its accuracy, comprehensiveness, and for the immense amount of labour and energy expended upon its preparation—we allude to Alexander Cruden, to whom the public is indebted for the best Concordance of the Scriptures it possesses in the English language. It may excite some surprise also in the minds of many who know the reputation of that elaborate and valuable work to hear that its author was to a certain extent, through the greater part of his life, subject to the visitations of the most fearful malady that can afflict mankind—insanity, and of which the title he assumed as above is but one of many indications. In the principal collections of biography, encyclopædias, &c., the life of Cruden is either but very briefly mentioned or altogether passed over; but if from that circumstance it be assumed that there is nothing noticeable or interesting in the life, the striking fact we have just mentioned, and still more the particulars we are about to give, must, we think, effectually remove the impression.

Cruden was born at Aberdeen in 1701, and was the son of a respectable tradesman, or "merchant," as he was styled, in accordance with the Scottish custom, who had served the office of baillie in that town. Scotland has been long distinguished for its educational facilities, and Aberdeen was more than ordinarily favoured in this respect. Young Alexander was sent first to the grammar-school, and afterwards entered as a student of Marischal College. He had scarcely finished his studies when the first evidences of his malady appeared. To make the matter worse, he at the same time fell in love with a young lady, who of course repelled his advances; but his importunities became so great, that ultimately Cruden was committed to the town gaol. Soon after his liberation, he had to suffer the exquisite mortification of hearing that the lady of his heart had proved as frail as she was fair, and had only been saved from the humiliation of the "cutty-stool" by a precipitate departure. Cruden's love, however, can scarcely have long outlived such a discovery. It was most probably this incident which led to his removal from Aberdeen to London, where for some years he employed himself in teaching the classics as a private tutor. After a brief visit to the Isle of Man, spent in the same manner, he opened a bookseller's shop under the Royal Exchange: at the same time he filled up his leisure and increased his scanty income by correcting the press for various printers, an occupation in which he was soon distinguished for his accuracy, punctuality, and for the depth and variety of the knowledge he brought to bear upon it. Whilst thus peacefully and usefully engaged, his feelings were again shocked by an unexpected meeting with the object of his early love. Somewhere about this period he assumed the title of 'the Corrector,' not simply as an evidence of the nature of his private duties, but also of his asserting before the world his idea of the vocation to which he was called as a reformer of the public morals. About this period also he began his great work, the 'Concordance.' To those who have examined it, no remark as to the amount of labour and energy it required will be necessary; to those who have not, it will be sufficient to ask them to remember what a Concordance is—a work which indicates every passage in the Bible containing a word of any note—and to add, that of all English Concordances, Cruden's is the most accurate and complete. The completion of the Concordance proved, for some time at least, an unhappy circumstance for its author. The sudden cessation from his accustomed labour is supposed to have brought on the violent recurrence of his infirmity, which now seized him, and in consequence of which he was confined in a private madhouse at Bethnal Green, kept by one Matthew Wright. The

following quotation is merely the title of the pamphlet Cruden published on his escape from this place:—

"The London Citizen exceedingly injured, giving an account of his adventures during the time of his severe and long campaign at Bethnal Green, for nine weeks and six days, the citizen being sent thither in March, 1738, by Robert Wightman, a notoriously conceited whimsical man, where he was chained, handcuffed, strait-waistcoated, and imprisoned; and he would probably have been continued and died under his confinement, had he not most providentially made his escape by cutting with a knife the bedstead to which he was chained. With a History of Wightman's Blind Bench, which was a sort of court that sat in Wightman's room at the Rose and Crown in the Poultry, and unaccountably pretended to pass decrees in relation to the London Citizen; particularly this blundering and illegal Blind Bench decreed that the London Citizen should be removed from Bethnal Green to Bethlehem Hospital, the audacious men thinking by that means to screen Wightman and the criminals from punishment for confining the Citizen; but Providence frustrated their designs." The "punishment" here alluded to was to arise from the anticipated verdicts in the actions for damages which Cruden had instituted against Wightman and Dr. Munro, the parties he looked on as the chief offenders. Of the first trial, that against Dr. Munro, he gives an account too long for quotation; it concludes thus:—"The chief bencher is not an ignorant man, and wanted the Corrector to consent that the jury should withdraw, and give no verdict; but he refused it with indignation, being fully convinced that he had a right to a verdict, and therefore he would not approve of their unjust proceedings. The bencher afterwards directed or rather commanded the jury, by saying, 'You are to bring a verdict for the defendants,' which they did. The Corrector made a speech in court before the verdict; and after the verdict, meekly said, 'I trust in God.' The chief bencher replied, 'I wish you had trusted more in God, and not have come hither.'" A new pamphlet now appeared, commencing "Mr. Cruden exceedingly injured," &c. And really he seems to have been right in his sense of injury, if, as he states, such harshness was used towards him; for however eccentric or even annoying his conduct to particular individuals occasionally may have been, not the slightest tendency to mischief as regards any of his fellow-creatures ever appeared. Neither does it appear possible that his insanity could ever have been very violent, for even now, immediately after he had thus made his escape from confinement, he returned to his old avocations, and, according to competent authorities, pursued them in the most satisfactory manner to all concerned.

In 1753 he again fell in love, the object of his addresses was, on this occasion, a rich widow lady, whom he speaks of under the fictitious name of Whitaker. His malady now recurred to such a degree, that he was once more placed in confinement. No sooner was he freed than he commenced, as before, an action against the parties; but the counsel threw up their briefs before the trial, and the verdict was of course again in favour of the defendants. Still unsatisfied, Cruden moved the court of King's Bench for a new trial; that, too, was refused: upon which, in the presence of the judges, he immediately cried out, with a loud voice, "I appeal to the king in council, or to the House of Lords." He reconsidered this determination, however, and issued another pamphlet instead, which he determined to present to the king personally. His applications for admittance were treated with contempt, with but one exception. He had hoped, it appears, to have attained the honour of knighthood in these court visits; explaining, that "it it should be asked why the Corrector was so desirous of the honour of being a knight, he answers, that thinking men often seek after titles rather to please others than themselves." Disappointed in this view, he next offered himself as a parliamentary candidate for the city of London, in 1734, and was actually put in nomination. He appealed to the citizens "whether there were not just grounds to think that God would be pleased to make him an instrument to reform the nation, and to bring the citizens of London to a more religious temper and conduct." He was treated with great good humour by the other candidates and their friends, and although he lost the election, he consoled himself with the thought that he had won the people's hearts.

Having thus failed, for the present at least, in his preliminary steps towards the reform of the whole nation, he did not in the meanwhile think an unworthy part thereof beneath his notice. Hearing of the dissipation prevalent in the university of Oxford, he went down, and boldly exercised the duties he had imposed upon himself He frequented the public walks, reproving whatever levity or indecorum met his eye, and on the Sabbath bade the wanderers go home and employ their minds on sacred subjects. So little was his success after all, that he shook off the dust of his feet against the devoted city, and returned to London. In 1761 we find him engaged, by Woodfall, as a corrector of his celebrated journal, the 'Public Advertiser;' and, in 1762, he published a second edition of his 'Concordance,' with a dedication to the Earl of Halifax. The object of this dedication was to obtain pardon for one Richard Potter, a seaman, condemned to death for forging a brother sailor's will, and who, from a state of deep insensibility and ignorance, was roused, by Cruden's instructions and spiritual ministrations, into a penitent and better condition. The application was successful, and thus ended an affair which was highly creditable to Cruden's humanity and perseverance. Nothing less than a general reform of the criminals in Newgate would do after this, which was accordingly attempted—we need scarcely add, in vain.

Cruden was a loyal subject of the house of Hanover, and took an active part in the politics of the day. He launched a spirited pamphlet at Wilkes, and, not content with that, took the trouble to walk through the streets, erasing the objectionable "No. 45"* from the walls: indeed, whilst we are upon this latter subject, we may remark, that he seldom went out without a sponge for the purpose of rubbing off the walls any indecent or otherwise offensive expression he might find. In 1769 he visited Aberdeen, but it was only to find the truth of the old proverb, "a prophet hath no honour in his own country." The extravagance of his views, or the ludicrous manner he used in enforcing them, excited the laughter of his audiences, and put his placidity of temper to a severe trial. One of the quizzers was a conceited young clergyman, on whom Cruden most effectually turned the ridicule, hitherto directed towards himself, by formally and gravely presenting him with a little manual then popular in Scotland, entitled 'The Mother's Catechism, dedicated to the young and the ignorant!' But the end of poor Cruden's life, with all its simple follies and valuable and enduring labours, was approaching; he returned to London in a few months, and on the 1st of November, 1770, was found dead in his chamber at his lodgings in Camden Street, Islington. He had been in perfect health the preceding evening, and at the moment of death must have been praying, as was evident from the attitude in which he was found.

* The number of the 'North Briton' in which appeared Wilkes's famous article.



[Louis XIV. in his Bedchamber. Adapted from Laborde's 'Versailles.']

A DAY OF LOUIS XIV.

During the reign of Louis XIV., which embraced the long period of seventy-two years, from 1643 to 1715, France was changed from a feudal monarchy into an absolute one. Under the previous reign Richelieu had successfully commenced the policy of weakening the feudal nobility, and thus paved the way for the absolute government of Louis XIV., under whom this work was completed. The nobility were drawn from their châteaux to court, employed about the person of the monarch, and rendered dependent on his favour. They soon lost their former spirit of independence, and, becoming corrupted by pensions and court favours, sank into a state of effeminacy from which they never rose. Their vices, follies, and weaknesses hastened the Revolution, and at the same time disabled them from taking any useful part in that great movement, under which they were ruthlessly crushed.

The following account of a day at the court of Louis XIV., taken from the memoir-writers of the period, presents a humiliating picture of the French nobility at that time, when the highest object of their ambition was the favour of the sovereign, to obtain which they eagerly aspired to perform menial services about his person:—

About eight o'clock in the morning, while a servant prepared the fire in the king's apartment, and Louis still slept, the pages of the chamber gently opened the windows, and removed the collation which had been left in case of the king requiring refreshment in the night. Bontemps, the first valet, who had slept in the same room, and had dressed himself in the ante-chamber, re-entered, and waited, silent and alone, until the clock struck the hour at which the king had desired to be awakened. He then approached the king's bed, saying, "Sire, the clock has struck," and went directly into the ante-chamber to announce that his majesty was awake. The folding-doors were then thrown open, and the Dauphin and his children, Monsieur and the Duke de Chartres, were in waiting to wish him "good morning." The Duke du Maine, the Count de Toulouse, the Duke de Beauvillers, first gentleman of the chamber, the Duke de la Rouchefoucauld, grand master of the wardrobe, entered, followed by the first valet of the wardrobe and other officers bringing in the king's dresses. The principal physician and surgeon were also admitted. Bontemps, then handing a silver-gilt vessel, poured on the king's hands some spirit of wine; the Duke de Beauvillers presented the holy water, and his majesty made the sign of the cross, while the Dauphin and the Duke du Maine, approaching the king's bed, asked him how he had slept. After he had recited a very short religious service, M. de St. Quentin laid before him several perruques, and the king pointed out the one he intended to wear. As soon as he rose from his bed, the Duke de Beauvillers

handed him a rich morning-gown, and Quentin presented the peruque, which the king put on himself. Bontemps next drew on his majesty's stockings, and, on being dressed, the holy water was again offered to him. He now went from the balustrade within which the bed was placed, but which is not shown in the engraving, as the scene is supposed to be within it, and, seating himself in an arm-chair near the fire-place, demanded "la première entrée," which the Duke de Beauvillers repeated in a loud voice, on which a page of the chamber admitted those who, by right of their office or the king's favour, were entitled to be present at the "petit lever." The Marshal Duke de Villeroy, the Count de Grammont, the Marquis de Dangeau, M. de Beringhen, the four secretaries, Colin and Baurepas, readers of the chamber, Vergins, the Count de Crécy, secretary of the cabinet, and the Baron de Breteuil, with several keepers of the wardrobe not on service, and the keepers of the gold and silver plate, were introduced. His majesty then underwent the operation of shaving, the basin being held by Charles de Guisgne, Quentin adjusting the shaving-cloth, and applying the soap-brush and razor, and afterwards a soft sponge dipped in spirit of wine, and subsequently in pure water. The king wiped his face with a dry napkin, Bontemps holding a looking-glass during the whole of these operations. When these were finished, Caillebat, Marquis de la Salle, and Letellier, Marquis de Louvre, master of the wardrobe, prepared to attend the king while he dressed, previous to which he demanded the "grande entrées," the admission to which was regarded as one of the highest court favours. On each individual presenting himself in the ante-room, the Sieur de Rassé, one of the ushers of the chamber, approached the Duke de Beauvillers, and announced his name in a low tone, the duke repeating it to the king, when, if his majesty did not make any objection, the introduction took place. Nobles of the highest rank, marshals, bishops, governors of provinces, and presidents of the parliament, now entered in succession. At length a gentle knock is heard at the door, and Beauvillers is ready to receive from the groom of the chamber the name of the new comer, and to announce it to the king; but the door is opened without ceremony, although it was neither a great churchman nor soldier; it was Racine: and soon afterwards Boileau, Molière, and Mansard, the architect, are introduced with as little form.

The king, however, is now engaged in dressing, and the courtiers have the gratification of witnessing this ceremony. The page of the wardrobe hands to Gabriel Bachelier his majesty's stockings and garters, who presents them to the king, and Louis puts on the former himself. Another officer hands his "haute-de-chausse," to which silk stockings are attached, and a third puts on the king's shoes. Two pages, splendidly dressed, remove the habiliments which the king throws off, and his majesty buckles the garters himself. Breakfast is now ready, and Louis commands Racine to seat himself at the table. Two officers of the goblet bring in the breakfast service. The chief butler presents to the Duke de Beauvillers a silver-gilt cup, in which the duke pours out wine and water from two decanters, borne by another officer, tastes the beverage, and, after the cup has been rinsed, he presents it to the king, who drinks. The Dauphin then gives his hat and gloves to the first gentleman of the chamber, takes a napkin, handed to him by another officer, and presents it to the king, who wipes his lips.

After breakfast is finished, Louis takes off his morning gown, and the Marquis de la Salle assists the king in taking off his night-vest by the left hand, while Bontemps is similarly employed on the right. The latter receives from the king his purse, and hands it to François de Belloc, who places it in a cabinet, and remains in charge of it. Bachelier brings a shirt, which he has aired, and presents it to the Duke de Beauvillers, and the Dauphin, again laying aside his hat and gloves, hands it to the king. Two officers extend before the king his "robe de chambre," and Bachelier receives the garment which the king has taken off. The Marquis de la Salle assists the king to pull on his long stockings, and the Duke de la Rochefoucauld helps him on with his under-waistcoat. Two valets of the wardrobe then present the king with his waistcoat, sword, and the blue ribbon with the crosses of the Holy Ghost and St. Louis. The Duke de la Rochefoucauld buckles on the sword, and the Marquis de la Salle assists his majesty to put on his coat, and next presents him with a rich lace cravat, which the king ties on himself. The Marquis next empties the pockets of the dress which had been worn by the king on the previous day, and which is held by Bachelier, and receives from the Sieur de Saint-Michel two handkerchiefs, presented to him on a waiter. The king then kneels in the space between the bed and the wall, and repeats a prayer, all the cardinals and bishops approaching and joining in a low tone.

His majesty was now ready to receive such of the foreign ambassadors as had occasion to wait upon him; and the ambassador of Spain was introduced to him by appointment, previous to which a coverlet was thrown on the bed, and the curtain drawn in front and at the feet. The king took his seat within the balustrade, the Dukes de Beauvillers and de la Rochefoucauld and the Marquis de la Salle standing near him, and the princes of the blood being seated by his side. The ambassador is introduced, and makes three obeisances, upon which the king rises, and, taking off his hat, salutes the ambassador, after which, putting on his hat, he resumes his seat. The ambassador, who had by this time commenced his address, put on his hat, on which the princes did the same. At the conclusion of the interview he retires, bowing three times. A lieutenant-general of one of the provinces is next introduced, for the purpose of taking the oaths of office, during which he kneels and places his hands within those of the king, having previously given his sword, hat, and gloves to an officer of the chamber. When the king was indisposed or took medicine, the honour of being present at the "grand entrée" was one of the highest aspirations of the courtiers, the mode of reception being less formal.

The "grand entrée" was terminated by the king exclaiming, in a loud voice, "To the council!", on which he immediately proceeded to his cabinet, where he found many officers in waiting, to whom he gave orders for the day. To the Bishop of Orleans, first almoner, he said that he would go to mass at noon, instead of half-past nine, as he had intended; to the Marquis de Livry, his first maître-d'hôtel, that he would dine in his private apartment, and that he would sup "au grand couvert," that is, in state; to Bontemps, who handed to him his watch and reliquary, that he would visit the fives' court; to the officer of the wardrobe, that he would go out at two o'clock, and would take his mantle and muff; then, putting on his ordinary peruque, he took his seat at the upper end of a table covered with green velvet, the Dauphin and other illustrious and distinguished persons taking their seats near him, according to their rank. At the conclusion of the council, his majesty repaired to the chapel, and, in passing, gave the watchword of the day to the gendarmes, dragoons, and musqueteers

During mass, the king's musicians performed a fine motet, composed by the Abbé Robert. At one o'clock the Marquis de Livry, bâton in hand, announces that

dinner is served, when Louis, attended constantly by a captain of the guard, repairs to his apartment, two attendants preceding him, carrying a table already set out. The Sieur du Plessis, who was in waiting, hands to the Duke de Beauvillers a moistened napkin, which the Dauphin presents to the king. Each dish had been tasted beforehand, and on a sign from the king an esquire carver cuts up the viands, and the gentleman in waiting changes the king's plate. After he had dined, his majesty, throwing on his mantle, and having received his muff from the master of the wardrobe, descends to his carriage, which is waiting for him in the marble court, a crowd of seigneurs ranging themselves on each side of the staircase. After remaining some time at the fives' court, where the Dukes de Chartres, de Bourgogne, and du Maine were enjoying this favourite game, he returns to the palace. About three o'clock he pays a visit to Madame de Maintenon, where, reclining in an arm-chair, near the fire-place, opposite this lady, who is working a piece of tapestry, he every day passed one or two hours, listening, occasionally, to Racine, who came here sometimes to read his compositions. 'Esther' and 'Athalie,' two of Racine's best productions, were performed in this apartment, by the young ladies of the school of St. Cyr, for the king's amusement, who was highly pleased with the unexpected entertainment. The performance concluded at an early hour, and at ten o'clock Louis took his departure, after remaining some time in conversation with madame, who had already retired to bed. The king, drawing the bed-curtains, then repaired to the apartment in which he was to sup "au grand couvert."

The different officers had already made the preparations for this ceremony; the table had been laid out by a gentleman in waiting; and the dishes were brought in according to a ceremonial settled by an ordinance of the year 1681. Being seated at the table, the king requested the Dauphin and the princes to take their places at the other end. The Dauphin presenting a napkin to his majesty, supper commenced, six gentlemen remaining standing to wait upon the royal party. When the king wished to drink, the chief butler called out, in a loud voice, "à boire pour le roi," on which two of the principal servants under him, having made an obeisance, presented a silver-gilt cup and two carafes, and tasted the beverage, when his majesty helped himself, and, after another obeisance, the two officers withdrew to the sideboard. Performances of music took place during the repast, and a crowd of courtiers and persons of distinction were present who remained standing, or occupied seats around the apartment. All rose on the king getting up from table, and his majesty proceeded to the grand saloon, whither the courtiers followed him. Here he remained standing for a few minutes, engaged in conversation; then, bowing to the ladies, he rejoined his family in another apartment.

About midnight preparations were made for the king's retiring. A cold collation was taken into the apartment where he slept; the arm-chair was drawn to the fire-place, and the chief barber arranged the dressing-table. On entering, the king found the courtiers again assembled. He gave his hat, gloves, and cane to the Marquis de la Salle, who handed them to Saint-Michel, and while he unfastens his belt in front, de la Salle detaches it behind, and Saint-Michel places it, with the sword, on the dressing-table. His majesty then says a prayer, and the almoner, who holds the wax lights, also repeats a prayer for the king, and informs him that mass will be said next day at nine o'clock. The king, returning to his seat, hands his watch and reliquary to a valet-de-chambre, and the Duke de Beauvillers, having asked his majesty by whom he wished to be lighted, the Duke de Chartres is distinguished by this mark of royal favour, and takes the wax lights into his hands. The king then takes off the blue ribbon, which de la Salle receives, as well as the king's cravat and waistcoat, and his majesty sitting down, Bontemps and Bachelier take off his garters, and two valets each draw off one of the king's shoes and stockings, which Saint-Michel places on an arm-chair near the bed. Two pages present the king with his slippers, and the Dauphin his "chemise de nuit," which had been aired by a valet of the wardrobe, and his majesty rises to put on his robe de chambre, at the same time bowing to the courtiers, who take this as the signal for withdrawing. Bontemps takes the candlestick from the Duke de Chartres and gives it to one of the nobles who had solicited the honour of holding it, and the groom of the chamber cries out, "Allons, messieurs, passez." The "grand coucher" is finished, and only the princes and others who had been present at the "petit lever" remain. The king now seats himself on a folding seat, near the balustrade, and Quentin combs and arranges his hair, while two valets hold a looking-glass and a light The Duke de la Rochefoucauld presents the king with his nightcap and two handkerchiefs, and the Duke de Beauvillers hands to the Dauphin a napkin, which the latter is to present to the king. All the attendants are now dismissed, the physician alone remaining, and, after he withdraws, the bed is aired, and the king is left to enjoy, if he can, the repose which such irksome ceremonies must have made needful. Bontemps draws the curtains, secures the doors, and then lays down on a bed prepared for him in the same chamber.

Such was a day of Louis XIV. at Versailles!

Diseases of the Hip-Joint.—In science, as in the useful arts, the advantages of a division of labour are apparent in the more complete mastery which an individual obtains over a subject to which he directs constant attention; but the benefit does not end here, for, unlike the proficiency which is attained by subdividing the parts of manual employment, the successful prosecutor of any particular scientific subject is enabled to communicate the results which he acquires, and thus enables others to profit by his investigations. The labours of numerous individuals, each directing his attention to a part as well as the whole of a subject, tend to perfect the science which it embraces. In no department is this more obvious than in medical science, and a work by Mr. Coulson, 'On the Diseases of the Hip-Joint,' is a proof of this, as no professional man, without devoting his attention to this class of diseases, could have accumulated so many valuable facts and such extensive experience concerning it. This disease is often the consequence of carelessness, and persons expose themselves to it without being aware of their danger. Mr. Coulson observes:—"The continued application of cold to the part, a striking cause of enfeeblement, is a common cause of this disease. I attended a child, six years old, who had experienced two attacks of the disease within nine months, each attack having been brought on by sitting on the cold steps." It often originates from damp beds, from working in water or in wet grounds, or being casually much exposed to wet, as among washerwomen and brewers' servants, and others liable to have their clothes often wet. But lying on the damp ground, especially when the body is heated, is a very common cause." He thus describes some of the peculiarities of this part of the human frame:—"All the parts of the hip-joint have a peculiar character; they are low both in regard to vascular action and in the scale of sensibility. The value of this is evident, seeing that there is no rest to this joint, and that every motion of the body is accompanied by movement of the head of the os femoris in the acetabulum; for even the slightest motion, however remote, causes less or greater change in the centre of gravity of the body, and compels us to poise the trunk anew upon the hips. Were those parts more sensible, we should be perpetually lame. Happily, there is sufficient sensibility to form an adequate guard against excessive motion of the joint, and little enough to permit the natural use of the limb—a nice adjustment of sensibility to function. The left hip-joint, which is feebler than the right, is observed to be more frequently affected."



[Rock of Dunbarton.—From an original Sketch.]

DUNBARTON CASTLE.

Few even of the generally picturesque castles of Scotland possess a happier site than that of Dunbarton. It stands upon a very singular rock jutting out into the Frith of Clyde about fourteen miles below Glasgow, and the top of which divides into two peaks, one considerably loftier than the other; over this very irregular surface the buildings which compose the castle are scattered. The rock itself stands upon a small peninsula formed by the junction of the little but beautiful river Leven with the Clyde, and occasionally, when the tides are high in winter, is completely surrounded by water. The fortress commands the navigation of the Clyde, and is considered the key to the western highlands of Scotland: but its importance is of the past rather than the present; the interest attached to it arises from the events recorded in its history, and not from its strength, or from the objects which cause its strength to be still kept available. To those events, however, our space will only admit of brief reference.

The rock was originally called Alcluyth, signifying the rock of the Cluid or Clyde, by the Britons, and is said to have been the seat of Rhydderech-hael the bountiful, king of the Britons. By the Romans it appears to have been called Dun-briton, the fort of the Britons, from whence comes the present designation; they also made it a naval station, under the name of Theodosia; about two hundred and forty years ago, various remains of that people were found at Dunbarton, and on the western peak of the rock we find a circular mass of stones strongly built together, which is supposed to have been erected by the Romans as the base of a watch-tower. From a very early period of what we may call the modern history of Scotland, the castle formed a royal stronghold, and was considered impregnable before the invention of gunpowder; an opinion, however, strangely at variance with the facts of the history of the castle, so often has it been taken and retaken. Of its state about the middle of the sixteenth century, Harding, in his Chronicle, gives the following description:—

> "And pass on furtherwarde to Dunbertayne,
> A castle strong, and harde for to obtaine;
> In whiche castle Saincte Patrike was borne,
> That afterward, in Irelande, did winne:
> About the whiche [Dunbertayne] floweth even and morne
> The western seas, without noyse or dinne;
> When furthe of the same the streames dooe rinne
> Twise in xxiv houres without any faile;
> That no manne maie that strong castle assaile."

If there be any doubt as to the fact of St. Patrick's having been born in the castle, there is little or none as to this being the true neighbourhood. In his 'Confessions,' Bonaven Tabernia is stated to be the place of his birth, which it is supposed is the same with Kilpatrick, a town lying between Dunbarton and Glasgow. At the commencement of Edward the First's manœuvres to obtain the throne of Scotland, Dunbarton was given up to him, and shortly after placed under the charge of John Baliol. Dunbarton has a near connection with one of the greatest of Scotland's sons, and with one of the most melancholy events of its history. Wallace was brought here immediately after he had fallen into Edward's power by the treachery of the ever infamous Sir John Menteith, and who, among other rewards, obtained the governorship of the castle for his services. A gigantic sword is still shown in the castle as the identical weapon which the great patriot had wielded in many a good fight; and a part of the fortress, most probably that in which he was confined, was long called by his name. In 1309 the castle was taken from Sir John Menteith by a stratagem, of which the particulars are not preserved, but the chief actor was one "Oliver, a carpenter," who re-

ceived a grant of lands in consequence. From this period to that of the reign of the unfortunate Mary, the castle was continually changing hands. In the early part of Mary's reign it was taken from the earl of Lennox by the royalists; and after her dethronement, its governor, Lord Fleming, still remained faithful to her cause. But on a dark and stormy night, in 1571, one Captain Crawford with a few soldiers secretly scaled the walls, and obtained possession of the castle after a sharp struggle. Lord Fleming escaped, but his lady was made prisoner, and also a more important personage, Hamilton, archbishop of St. Andrews, who was particularly obnoxious to the ruling party. The unhappy prelate was sent to Stirling, and there hung on a tree, with a Latin couplet inscribed beneath, that we may thus render: "Live long, happy tree, always flourishing with branches that to us bear such fruit." In 1640 it finally fell into the hands of the Parliamentarians, and, shortly after, the Scottish parliament ordered the works to be destroyed, an order that does not appear to have been at all obeyed. Cromwell obtained possession of the castle in 1652. At the union of the two countries in 1707, Dunbarton was one of the Scottish fortresses that it was agreed should be kept in continual repair. The establishment now consists of a governor—Lord Lynedoch, a lieutenant-governor, barrack-master, storekeeper, surgeon, and about forty-two soldiers, mostly invalids.

The castle is only approachable through an ancient and massy gateway, and by a very narrow passage fortified by a strong wall or rampart. Within this wall, which is continued almost all round the rock, is the guardhouse with lodgings for the officers; and from thence a long and steep flight of steps leads to the summit. The entire way is defended by batteries of heavy ordnance. The two peaks of the rock are connected with each other by a bridge. In the different buildings scattered about the rock, two hundred soldiers can be accommodated. The castle is plentifully supplied with water from a well. It is said that an immense piece of the rock once fell down from its side, and buried a woman and a cow she was milking in the plain beneath so completely that not a vestige of them could be seen, and it was found impossible to lift the enormous pile in order to extricate their bodies.

The town of Dunbarton derives its name from the castle, and one or both give name to the shire. Dunbarton is now the principal place of the county, as it was in very early times of the earldom of Lennox. It is also a very ancient royal burgh. The population of late years has decreased, mainly through the decline of the glass manufacture; in 1831 it amounted to 3023 persons. Smollett, who was born in the neighbouring parish of Cardross, received some portion of his education here. Of his love and admiration of the scenery of his native place, he has left a sufficient testimony in his beautiful poem on the river Leven, which, though scarcely six miles long, presents one continued succession of the most charming and beautiful scenery.

THE MARTYRS' MEMORIAL, OXFORD.

THE power of self-sacrifice for what is believed to be a great and holy cause, is one of the noblest and most valuable qualities that can adorn or dignify human nature; and, as all history proves, is confined to no age or country, to no sect, party, or colour. But enthusiasm has its mistakes and failures as well as its glorious truths and successes: it is not always that its disciples can be regarded with the peculiar affection and reverence with which the great body of Englishmen regard the distinguished martyrs of the sixteenth century;—it is not always that we can look back upon the sentiments which inspired the dying declarations of those who have shed their blood in our service, with the same deep sense of sympathy and satisfaction that we now feel in reading Bishop Latimer's—"Be of good cheer, Master Ridley, and play the man," that he addresses to his fellow sufferer at the stake; "we shall this day light such a candle, by God's grace, in England, as, I trust, shall never be put out!" And it never was put out!—The beautiful memorial which is now in progress of erection near the spot where these ever memorable words were spoken, forms a significant commentary upon the truth of the fine old martyr's prophecy.

The Reformation, which during the reigns of Henry VIII. and Edward VI. had made such great progress, appeared to be almost brought to a sudden close by the accession of Mary. Scarcely had she felt herself securely seated on the throne of England before the Reformers received unerring indications of the future that awaited them, in the imprisonment of their most distinguished members, Cranmer, Latimer, Ridley, Hooper, &c. The revival of the former brutal laws against heretics soon followed, and in January, 1555, the work of persecution was formally begun by the appointment of a commission which sat in the church of St. Mary Overy. The fires of Smithfield were lighted on the 4th of February, when John Rogers, prebendary of St. Paul's, met his fate with a courage and boldness which doubtless inspired many of those who were to follow with confidence and strength to imitate his example. Five days after, Bishop Hooper perished at Gloucester, and almost at the same time, from one end of the country to the other, might have been seen ascending toward the heavens the smoke of those cruel and unnatural sacrifices which men offered to the God of Love, and in the name of Him who came to declare "Peace on earth and good will towards men!" The greatest victims were still reserved. There appears to have been entertained from the first a hope of humiliating Cranmer, and perhaps Ridley and Latimer, by inducing them to recant; and no efforts were spared to accomplish what was deemed so important to the glory of the Roman church and the degradation of its antagonist. In March of this year they were all removed from the Tower to Oxford, and about five weeks afterwards, viz. the 14th of April, they were brought from their prisons to St. Mary's church, and there informed that they were to debate in public on the doctrines of transubstantiation, the efficacy of the mass, &c.: if they succeeded in convincing their opponents, they were to be freed! No books were allowed them —no time for preparation—nor were they even allowed to support each other. Cranmer commenced the discussion on the 16th, and supported his opinions with more courage than had been anticipated from his somewhat yielding character; but he was overpowered by the number and violence of the speakers, and could scarcely make himself heard amidst the hisses and hootings with which the Oxford scholars greeted the announcement of every offensive tenet. Ridley met with no better treatment on the following day, but his nerve, his ability, his determined adherence to one line of argument, and the great extent of his knowledge enabled him on the one hand to detect the slightest misquotation on the part of his adversaries, and on the other, to bring upon them the whole spirit and force of the Scriptures in support of his views. They were even constrained to acknowledge his subtle wit and extensive reading. But what availed it all with men who would not be convinced? When pressed too closely, they raised a general uproar, all speaking to him at once. "I have but one tongue," cried Ridley; "I cannot answer at once to you all." The glory of the Protestant cause in this three days' contest is at-

tributed to Ridley. On the third day came Latimer's turn. The poor old man (he was now at least eighty years old) was so weak and faint that he could scarcely stand. "Ha! good master," said he to one of his judges, "I pray ye, be good to an old man. You may be once as old as I am; you may come to this age and this debility."

Latimer, who was a man of humble birth and simple manners, addressed his audience in English, and was therefore better undertood than his companions, who had spoken in Latin. But such was the treatment he received—the divinity school in which these debates took place seemed more like a bear-garden than a meeting of religious men to discourse on religious topics—that poor Latimer complained, with a naïveté that makes us smile, even whilst the tears rush into the eyes, that in his time and day he had spoken before great kings, more than once, for two or three hours together, without interruption; "but now," says he, "if I may speak the truth, by your leaves, I cannot be suffered to declare my mind before you, no, not by the space of a quarter of an hour, without snatches, revilings, checks, rebukes, taunts, such as I have not felt the like in such an audience all my life long." On the 28th they were all brought up once more to St. Mary's church, and asked whether they would now turn or not; but they bade them read on in the name of God, for they were not so minded. They were then condemned. Nearly eighteen months elapsed before the execution of their sentence. Ridley and Latimer were first brought to the stake. The scene was a ditch on the north side of Oxford, now forming part of the town itself, and covered with houses, streets, &c. The church of St. Margaret stands almost immediately opposite the place of execution. On quitting the prison, Ridley soon reached the spot, but Latimer, by reason of his great age, walked slow; seeing this, Ridley went to meet him, and, kissing him on the cheek, said, "Be of good heart, brother; for God will either assuage the fury of the flames, or strengthen us to bear it." According to custom, a sermon was preached on the occasion; the preacher was Dr. Smith, who, either from fear or interest, had renounced popery in King Edward's time, and was now only the more glad to show his zeal in its favour. His text was, "Though I give my body to be burned, and have not charity, it profiteth me nothing." After the sermon, Ridley undressed, giving away, as he did so, his apparel, a new groat, some nutmegs and bits of ginger, a dial, and what other trifles he had about him to the bystanders, some of whom were made most happy by the gifts. Latimer, from helplessness, submitted himself to the keeper to be stripped for the stake; but when he stood up in his shroud, erect, fearless, by the side of the faggots, he seemed in the eyes of the beholders to be no longer the withered and decrepit old man, "but as comely a father as one might behold." Then it was that as they were chaining him to the stake,—Ridley being already fastened on the reverse side,—the feeble-bodied but great-hearted old man broke out with that glorious prophecy, "Be of good comfort, Master Ridley, and play the man; we shall this day light such a candle, by God's grace, in England, as, I trust, shall never be put out." Gunpowder was fastened to the bodies of both; that which was attached to Latimer soon caught, and, of course, instantly killed him; Ridley was less fortunate, and his sufferings were as protracted as they were terrible.

Cranmer lingered in prison five months longer, the court hoping that, now he was deprived of the sympathy and comfort of his former associates, he would grow more pliant. As an archbishop, also, it was necessary, according to the canonical law, to submit his case to the pope, by whom he was, with a grievous mockery, cited to appear before him at Rome within eighty days,—Cranmer all the while closely imprisoned at Oxford! At the end of that period he was pronounced guilty, and sentence passed upon him. The hope of his enemies was now to be realised: Cranmer's spirit quailed at the near approach of death; he supplicated for mercy, entered into disputes, as if to show that he was still open to conviction, and even listened to those who spoke of safety through recantation. It was a critical moment. With a subtle and fiendish ingenuity they roused the natural love of life, which his captivity had somewhat dulled, into all its original force, or, from the force of contrast, into more than its original force; they removed him from his loathsome prison to the pleasant house and gardens of the Dean of Christchurch, where he fared delicately, played at bowls, &c., and was flattered by being told that the queen loved him, and wished earnestly for his conversion for that reason; in short, every thing was done that could be done to smooth and make pleasant the downward path that he was evidently half determining to tread. His tempters triumphed—Cranmer resolved to live—he signed a recantation. Alas! he knew not the men he had to deal with! Whilst the monks and learned doctors of Oxford were in full jubilee at the prostration of one of the proudest columns of the Reformed church, orders were given for immediate execution! What must Cranmer have suffered now? He had fallen from his high estate, and his conscience whispered that he was but justly punished. On the 20th of March, the eve of his execution, he was asked to transcribe a recantation to be delivered by him at the stake, after the sermon on the following day, which was to be preached by Dr. Cole, at St. Mary's.

When the appointed time came, Cranmer, to the great astonishment of the audience generally, instead of reading his recantation, burst out into a full and explicit declaration of his faith in the principles of the new religion, and added, "Now I come to the great thing, that troubles my conscience more than any other thing that I ever said or did in my life;—that is, the setting abroad of writings contrary to the truth which I thought in my heart, and writ for fear of death, and to save my life if it might be; and that is, all such bills which I have written or signed with mine own hand since my degradation, wherein I have written many things untrue. And forasmuch as my hand offended in writing contrary to my heart, therefore my hand shall be first punished. For if I may come to the fire, it shall be first burned. And as for the pope, I refuse him, as Christ's enemy, and Antichrist, with all his false doctrine." Here he was hastily dragged away, and prevented from further speaking. He was then conducted to the same ditch where Ridley and Latimer had perished, stripped and tied to the stake. He made no request for mercy, uttered no moan, but on the contrary, when the flames began to rise, thrust forwards his right hand wherewith he had signed the recantation, and kept it there while life remained.

"When the fire raged more fiercely, his body abided as immoveable as the stake whereto he was fastened, and, lifting up his eyes towards heaven, he exclaimed, 'Lord, receive my spirit!' and soon expired.

"The Romish church of England, with all its absolute hopes, may almost be said to have perished in the flames that consumed Cranmer. The impression made by his martyrdom was immense, and as lasting as it was wide and deep. On the side of the Roman Catholics, the putting him to death was as gross an error in policy as it was atrocious and detestable as a crime.

"Had the malignity of his enemies been directed rather against his reputation than his life,—had the reluctant apostate been permitted to survive his name a prisoner in the Tower, it must have been a more

arduous task to defend the memory of Cranmer, but his fame was brightened in the fire that consumed him."*

It is to the memory of these men, and of these events, that the Martyrs' Memorial is raised; and its architectural beauty may well gratify the admirers of both. Orginally it was intended to erect a small church; but the idea was abandoned from the impossibility of finding a suitable site for such a building near the spot where the martyrs perished. Ultimately it was determined to erect a monumental structure at the north extremity of Mary Magdalen's church, and to rebuild and enlarge an aisle of that church, to be called the Martyrs' aisle, and the architecture of which was to assimilate in style and expression with the monument. These arrangements are now in progress. The design of the monument was to be obtained by public competition; seven artists in all sent in their works, from among which Messrs. Scott and Moffat's was selected. The general idea of their structure is borrowed from the famous cross at Waltham, though with numerous alterations, and, it is said, improvements. The lower story is higher in proportion to its width than at Waltham,—it is more lofty (this is seventy, Waltham only fifty feet high),—greater strength and boldness is given to the mouldings in the basement,—more projections to the buttresses,—increased depths to the receding pannels. The lowest story, also, as being nearest to the eye, and therefore more open to examination, is to be more elaborately finished, and in the second story the niches which are to contain the statues of the three martyrs are deeper and more open, whilst the triangular blank arches between are diminished in proportion. Sir Francis Chantrey has promised his aid in the superintending of the designs and execution of the statues. When the work is completed, we shall give an engraving.

OPOSSUM AND RACOON HUNTING.*

[From a Correspondent.]

Among the smaller animals inhabiting the woods of America is that somewhat singular creature the opossum:† and although its skin is of little or no value, it is not only sought after by the more regular hunters, but the farmers in many instances find leisure to go in pursuit of the opossums, partly for the sake of their meat, which is dressed and brought to table, and partly in consideration of the depredations they are sometimes guilty of, which are not confined to the hen-roost or the poultry-yard, but extend to the crops of Indian corn, of which they are very fond. The opossum is never found in the more northern sections of the United States, nor in any of the adjacent English colonies, and even in such of the middle states as may possess it, it seems to shun the mountain-ranges, where the cold during winter is commonly very severe. I have never myself seen it, or indeed heard of its being met with, in a wild state, east of the river Delaware; nor in the southern parts of Pennsylvania have opossums ever been found in any considerable numbers, though in the adjoining states of Maryland and Virginia, even among the old settlements, where groves of the original woods have been left standing, these singular animals, at the present time, are somewhat numerous. They nevertheless appear rather particular in their haunts, confining themselves to certain ranges or districts, and live as it were in separate colonies.

Several years ago I spent some time with an Irish family that had resided for many years a little to the south of the Maryland boundary-line, until several sons had grown up to manhood; and among other customs of the country with which they had become familiar was that of opossum-hunting, since most of the original woods (groves, as they are usually called, when detached portions of the forest are left when the rest of the land is cleared) were frequented by these animals. Being aware that I was something of a hunter myself, my young acquaintances, on learning that my experiences were not in the opossum line, at once proposed to initiate me; to which I readily gave my consent. During the day these creatures are rarely seen upon the ground, and if the hunter then goes in pursuit of them, he must have a quick eye to the upper branches of the tallest of the forest trees, for it is there that they are to be found, moving leisurely from limb to limb, or occasionally hanging by the tail and attempting to swing themselves to some distant branch they wish to reach, for, possessing heavy bodies, they are by no means able, like the squirrel, to leap from one tree to another where the branches do not interlock. But this was not the way in which my companions, the young Irish-American farmers, commonly hunted them, for the mode they usually adopted, and which is the one most generally followed, was as follows. But it ought first to be remarked, that this species of opossum-hunting depends as much for its success upon the dogs which are employed as it does upon the guns; and in this respect my young friends were better off than most of their neighbours, for they possessed a couple of fine Scotch terriers, bred to the business, as well as two other dogs of a mixed or mongrel breed, and these also had long been trained to hunting the opossums.

It should be previously ascertained which of the forest trees appear to be the favourite haunts of these creatures—for the most part either chestnut, hickory, or beech trees,—and near the foot of such trees some of the hunters have to be stationed. Moonlight nights are the most favourable for these excursions, and it was upon one such that, about eleven o'clock, four of us set out in quest of our game. So late an hour is chosen in order that most of the opossums may have come down from their haunts in the trees for the purpose of foraging in the fields or paying visits to the farm-yards; but although they will sometimes destroy poultry, they do not generally venture to a great distance from the woods nor so close to the abode of man, since, when pursued, their short legs and bulky bodies are but ill adapted for rapid flight.

Myself and one of the young men, armed each with a gun, and attended by the two terriers, made our way to a part of a distant clump of woods, where, at the foot of some tall chestnut-trees, we and the terriers took our stations, while two more of the farmer's sons, accompanied by the couple of mongrel curs, commenced ranging the surrounding fields, for the purpose of driving back to the woods, rather than capturing, the opossums that might happen to be out, while myself and my companions were expected to be able to give a good account of as many of them as made for the trees where we were stationed. We presently heard, by the barking of the dogs employed in ranging the enclosures, that they had got upon the scent of their game, and a few minutes more gave us employment, for the scared opossums began to approach us in parties of two and three each, when the terriers were let loose upon them. Though these animals are but ill calculated for either offensive or defensive warfare, they are fat and bulky and tenacious of life, so that a contest between a stout one and one of our terriers would frequently last two or three minutes, which gave others that might be near at hand an opportunity of escaping, except when seen by one of us and brought down by our guns.

* 'Pictorial England,' vol. ii., p. 528.

† For a description of the opossum, see 'Penny Mag.,' vol. ii., No. 102, p. 131.

The two terriers had been so well trained to their business, that neither of them ever left the post assigned to it at the foot of some tree to assist the other in its various conflicts with the opossums, but would show by its whinings and restlessness how gladly it would have done so, had not its own sagacity, improved probably by education, convinced it of the impropriety; and when one of a party of opossums got past these terriers, and scrambled up one of the trees, they no longer directed their attention towards that point, apparently comprehending how useless it would be to waste further attention upon one that had thus got beyond their reach; but their watchfulness and anxiety to prevent a similar result seemed to be increased by every such occurrence.

Though a full-grown opossum is nearly the size of a badger, they have not the smallest chance for their lives when opposed to a middling-sized Scotch terrier, or indeed to almost any other species of the canine race; and were they not prolific animals, and on the whole not considered as either very destructive or their carcasses of much value, there is but little doubt but the race would become extinct wherever the country became settled.

The racoon is a far more common animal on the American continent than the opossum.* It, too, has its favourite haunts, for in some situations these animals are pretty abundant, while in others, apparently as well adapted to their tastes and pursuits, they are very rarely to be met with. It therefore happens that one scarcely meets with a person residing in the country, whether in the United States or in the British North American colonies, except in the very coldest parts of them, that is not familiar with these animals—for they are found in greater or less numbers from the St. Lawrence to the Mississippi. The racoon, like the opossum and the bear, is frequently used as an article of food, but it nevertheless requires persons that are strangers to racoon meat to divest themselves of certain prejudices before they are brought to relish it much. Like those other animals, it resorts to climbing into the tall trees of the forest for protection, and like them also, it subsists partly upon animal and partly upon vegetable food, for it is occasionally caught among the poultry, and in the forest it preys upon such birds as come within its reach. But besides its agility as a climber, it is possessed of a degree of cunning which is scarcely surpassed by the wily fox; so that, among the feathered tribes and such small animals as it sometimes chooses to make a meal of, it is a most dangerous and formidable neighbour, for when once its sharp fangs have seized their victim, there is but small chance of escaping.

In the woods where racoons are pretty numerous, they are in the habit of frequenting particular trees rather than climbing the first that may happen to come in their way when they feel disposed to quit terra firma, and from the mark they inflict upon the bark with their sharp and scratching claws, the practised hunter has little difficulty in detecting their favourite haunts. But being naturally cautious and watchful, they are not easily discovered in their lofty retreats; and many a time have I patiently watched at the foot of a racoon-tree for an hour or two, employing the stealth and subtilty of the cunning poacher, without the creature once venturing to expose any part of its body to my view; evidently being as well aware of my intentions, and of my whereabouts, as I was of its presence in some part of the tree. In almost every case the racoon selects a tree that is more or less decayed, so that in case of necessity it can seek for safety in some hollow recess, and when once alarmed so as to seek shelter in the cavity of some large limb or boll of the tree, they will sometimes remain for days before they venture from their hiding-place. When the tree is not very large, the American hunter often resorts to the expedient of hewing it down with his axe; but in that case there should be two persons at the least, for although the hidden game should continue in its snug retreat until it feels the tree reeling from its perpendicular, not even allowing the jarring blows of the heavy axe to alarm it so much as to induce it to leave its place of safety, the moment the tree commences falling the racoon becomes on the alert, and when it has nearly reached the ground the cunning creature springs from its hole and dashes through the woods, if not prevented by dogs or a rifle bullet. I have seen a racoon miscalculate its time for springing from the tree, and thus become stunned by the concussion; and have also witnessed them felled to the earth by one of the descending branches while in the act of making a flying leap; but on the whole, the precision with which they calculate the proper moment of quitting the tree is very remarkable.

The racoon, though by no means swift of foot, can bustle through the woods at a respectable speed for a short distance; but not possessing the speed of a dog when on smooth ground, it ventures as seldom as possible far from its favourite haunts and places of security; so that as the forests disappear, these animals became scarcer, though seldom wholly extinct. But it is more for the value of the skin than the carcass that the racoon is hunted in most parts of America; since, next to the beaver, it yields the best fur used by the hatter; and the value of the skin, which depends upon the season in which the animal has been killed, as well as the size, ranges from one shilling and sixpence to four shillings of our money. Springes, as well as traps, are sometimes employed in the capture both of racoons and opossums, and with considerable success by those who understand the art of trapping.

A neighbour of mine, an out-and-out American hunter, had a colony of tame racoons, some of which were as docile as rabbits. He kept them for several years, in the hope of increasing his colony so much as to make the skins of the old ones annually to be killed off pay the expenses of keeping the rest, in which case the carcasses would have been clear profit. They were by no means so prolific, however, as he had expected, for they did not rear half the number of young that they probably would have reared in a wild state. They were fond of Indian-corn, sweet potatoes, and beet-root, particularly when boiled; and it was difficult to say whether they received more enjoyment from devouring a carrier pigeon, or feasting upon a few spoonfuls of molasses. But if the molasses was mixed with a little of the common whiskey of the country, they become so ravenous over it, that serious quarrels would ensue; and such was their partiality for anything sweet mixed with a portion of ardent spirit, that after once tasting the mixture, they could not be prevailed upon, except by force, to leave a morsel of it unconsumed. In this way he would sometimes tempt them to get intoxicated; and although their behaviour was amusing enough while under the influence of the inebriating mixture, partly from their quarrels with each other, and the unfavourable effect produced upon the health of these animals for after being intoxicated they would refuse their ordinary food for some days, two or three of them died, so that he abstained from trying any more "such curious experiments" as he denominated the making the racoons drunk.

* For the natural history of the racoon, see 'Penny Mag.,' vol. vii., No. 371, p. 9.

A DAY AT A HAT-FACTORY



[The Hat Battery, or 'Kettle,' with Men employed in Wetting, Rolling, Pressing, 'Ruffing,' and Blocking the Hat Bodies.]

The early history of our manufactures frequently excites a smile at the quaint and energetic manner in which some of the old writers denounce the fashions of their times; but while we are often disposed to agree with them in ridiculing the strange forms of dress which have been adopted at different periods, we must withhold our assent to the principles of their commercial economy, which are often short-sighted in the extreme.

Philip Stubbs, a writer of the Elizabethan age, published, in 1585, his 'Anatomie of Abuses,' in which, among other things, the costume of the time is made the subject of censure. After anatomizing ladies' dresses, and discoursing on the iniquities of ruffs and furbelows, he visits the wardrobes of the other sex for a similar purpose, and thus speaks of the then fashionable hats:—"Sometimes they use them sharp on the crown, peaking up like the spear or shaft of a steeple, standing a quarter of a yard above the crown of their heads, some more, some less, as please the fancies of their inconstant minds. Some others are flat and broad on the crown, like the battlements of a house. Another sort have round crowns, sometimes with one kind of band, sometimes with another, now black, now white, now russet, now red, now green, now yellow; now this, now that, never content with one colour or fashion two days to an end. And thus in vanity they spend the Lord's treasure, consuming their golden years and silver days in wickedness and sin." But the material pleases him as little as the form and colour:—"And as the fashions be rare and strange, so is the stuff whereof their hats be made divers also; for some are of silk, some of velvet, some of taffetie, some of sarcenet, some of wool; and, which is more curious, some of a certain kind of fine hair. These they call *Bever Hats*, of twenty, thirty, or forty shillings price, fetched from beyond the seas, from whence a great sort of other vanities do come beside."

What would be the surprise of Philip Stubbs, if he could now witness the extent to which the "vanity" of "Bever Hats" influences the commercial arrangements of England:—the importation of beaver and musquash furs from North America, of neutria furs from South America, of wools from various parts of Continental Europe, of gums, resins, and dyes from almost every part of the globe! If he found, too, that one single firm gives employment to fifteen hundred persons in making hats of various kinds, and that the value of all the hats made in Great Britain in one year is probably not much less than three millions sterling, he would perhaps cease to include "beaver hats" in his list of abuses.

To mark the advance of the world in this respect, since the time of Stubbs, we propose to consider the present state of the hat manufacture. With this object in view, we have visited an establishment where the processes are conducted on a very complete and extensive scale; and we will suppose the reader to be accompanying us through the various departments of that establishment.

The hat-factory of Messrs. Christy occupies two extensive ranges of buildings on opposite sides of Bermondsey Street, Southwark. These we will term the east and west ranges, each of which is approached by a

gateway leading from the street. On entering the gateway to the east range, the first object seen at the end of a long avenue is a lofty chimney connected with a steam-engine, and rising to the height of one hundred and sixty feet. Over the gateway is a range of warehouses for wool and other articles; and from thence, proceeding onwards, is seen on the left a pile of buildings, occupied by cloth cap makers, hat trimmers, and packers. On the right of the same avenue is another range of buildings, consisting of a fire-proof varnish store-room, silk-hat workshops, and shops wherein the early stages of beaver hatting are carried on. At the left of the great chimney is a building wherein common black glazed or japanned hats are made; and near it is an archway leading northward to another avenue surrounded by buildings. These consist of a turner's shop, where blocks for shaping hats are made; a shell-lac store, where the lac is bruised, ground, and prepared for use; a blacksmith's shop, for the repair of iron-work used in various parts of the factory; a saw-mill and sawing-room, where machine-worked saws cut up timbers into boards for packing-cases required in the export department; a logwood warehouse, wherein a powerful machine cuts the logs into fine shreds; a fur-room, in which the beaver and other furs are cut from the skins by machinery; rooms wherein the coarse hairs are pulled from the skins; the steam-engine, with its boiler, furnace, &c.; a carding-room, for disentangling the locks and fibres of wool; a blowing-room, for separating two qualities of beaver-fur, or hair; together with various warehouses, storerooms, carpenters' shops, timber-yard, &c. This brings us to the northern extremity of the range; on returning from which we pass wool-warehouses and sorting-rooms, wool and fur washing-houses, stoving-rooms, fur-hat workshops, 'picking' rooms, clerk's offices, &c.

Crossing Bermondsey Street to the western range, we find a beaver store-room, the dye-house, stoving-rooms, shaping and finishing rooms, &c.; the whole being, however, much less extensive than the east range.

It may excite surprise to hear of saw-mills, blacksmiths', turners', and carpenters' shops on the premises of a hat-maker; but this is only one among many instances which might be adduced, in the economy of English manufactures, of centralization, combined with division of labour, within the walls of one factory.

The nature of the operations carried on in the greater number of these buildings will perhaps be best explained by tracing the history of a beaver hat from the time when the crude materials enter the factory, till the hat, in a finished state, is warehoused.

If a dozen individuals to whom the subject is new were asked, "How is a beaver hat made?" it is not improbable that we should receive a dozen different answers. One would think it is cast in a mould; another, that the beaver's fur, skin and all, is stiffened and shaped; a third, that the fur is in some way woven into a kind of cloth, and put on a stiff foundation; but perhaps not one would have an idea of the beautiful process of *felting*, which is the groundwork of the whole theory of hat-making. A beaver hat consists mainly of two parts,—the *body* and the *covering*; the former of which is made of fine wool and coarse fur, mixed, felted, stiffened, and shaped: and the latter of beaver fur, made to adhere to the body by the process of felting. Wool and fur constitute therefore the main ingredients employed. For hats of inferior quality, coarse wool is employed for the body, and coarser fur, or sometimes fine wool, for the covering.

The wool is brought to the factory in a dirty and greasy state, retaining much of the moisture derived from the animal. It is carried to a large washing-house, on a level with the ground, where the steam rising from immense boilers and tubs indicates the great scale on which the process is conducted. The wool is soaked and washed, until the greasiness is removed, and is then subjected to the action of a screw-press, whereby all the water is expelled, and the wool left in a clean state. From the washing-house the wool is conveyed to a drying-room; and, when required for use, it undergoes the process of *carding* in the carding-room. In a former number (No. 498) we had occasion to explain the action of a carding-engine in the cotton manufacture; and we need say no more of it here, than that such an engine, worked by the same steam-engine which sets so many other parts of the working apparatus in motion, combs out the fibres of wool, and presents them in a light and tolerably disentangled state. The wool is then ready for the hatter; and we will trace the preparation of the fur up to the same point.

The term *fur*, in a general sense, refers to the hairy coating of such animals as the beaver, bear, marten, minx, hare, and rabbit. The skins of these animals, when merely dried after being stripped from the body, are called *peltry*: when the skin of the inner side has been converted into a sort of leather, by a peculiar process of tanning, the skins obtain the name of *furs*, in a restricted sense; and the term is still more restricted when applied to the hairy coating cut from the skin, and presented in the form of delicate filaments.

Now it is in the last-named form that fur is useful to the hatter; and the furs to which he gives the preference are those of the beaver, the musquash, the neutria, the hare, and the rabbit, of which the first is by far the most valuable. The beaver inhabits the districts of North-West America, where its peculiar habits of life have given rise to many marvellous tales, the truth of which is now more than doubted. (See vol. ii., p. 122.) The romantic details often presented in the lives of beaver-hunters, as well as the mode of dealing between them and the fur-dealers, have been described in two articles on the Canadian fur-trade (Nos. 375, 376), and need not, therefore, be dwelt on here. The skins, as received at the factory from the Hudson's Bay Company are tolerably flat and stiff, measuring, generally, about three feet by two. The hairy surface is of a brownish colour, but is not that to which the hatter attaches value: for this animal has two kinds of hair on its skin, the innermost of which is short, implicated, and as fine as down, and the outermost thicker, longer, and more sparing. Of the separation of these two kinds we shall speak presently.

Neutria is the fur of a small animal called the *coypou*, the *quoiya*, or the *Myopotamus Bonariensis*, found in various parts of South America. The long or coarse hairs are generally of a reddish colour: and the inner or soft hairs, brownish ash colour. It was not until about thirty years ago that hatters, influenced by the high price of beaver fur (which within a century has risen from 20*s.* to 80*s.* per pound), began to use neutria fur; but since that time the employment of them has become so extensive, that one million neutria skins have sometimes been imported in one year. This animal is yet little known to naturalists, but certain peculiarities in the skin beneath the fur have led to much conjecture among those who have frequent opportunities of inspecting the skins, concerning the structure and habits of the animal: for these points we refer to the article in No. 243, vol. v., p. 20.

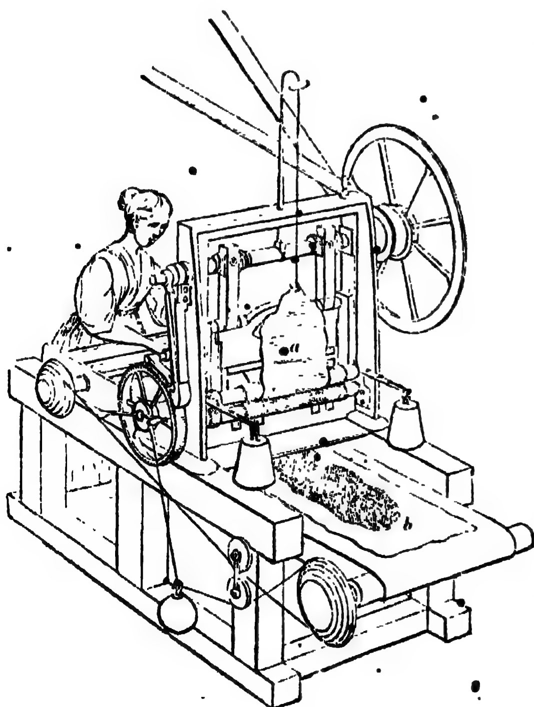
The *Musquash*, or *Mus Zibethicus*, is a North American animal, about the size of the common rabbit, and covered, like the beaver and the coypou, with two kinds of hair or fur, having different degrees of fine-

ness. The name *musk rat* is sometimes given to this animal, on account of its secretion of a peculiar fluid having the odour of musk. (See No. 521.)

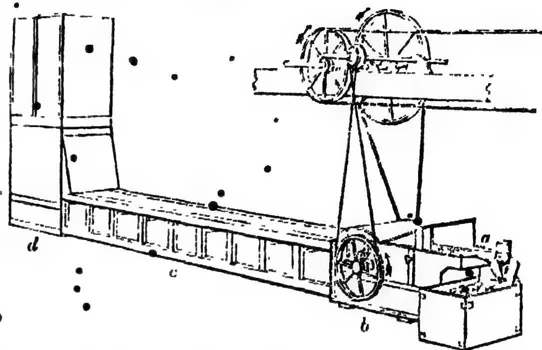
The fur of *hares* and *rabbits* is so well known as to render few words of description necessary. The rabbits fed on the wolds of Yorkshire are said to yield fur much exceeding in value that of the rabbits bred near London, by reason of the superior length and strength of the hairy filaments.

We have digressed a little, in order to show the nature of the furs employed by the hatter. The skins, or pelts, on being conveyed to the factory, are rather greasy and dirty, and are therefore cleansed with soap and water; this is effected in the same large washing-house where the wool is cleansed. When the pelts are dried and required for further processes, they are carried to the 'pulling-room,' where a number of women, seated on stools, are employed in pulling out the coarse outer hairs from the skins: these coarse hairs are utterly useless to the hatter, and, if preserved at all, are sold for stuffing cushions and such-like purposes. Each woman lays a pelt on her lap, or on a low bench, and, by means of a knife acting against the thumb, tears out the larger hairs, her fingers and thumb being guarded by a stout leather shield.

We next trace the progress of the pelt into a room where, to one unused to the din of machinery, everything seems noise and confusion. This is the 'cutting' or 'cropping' room, in which six or eight machines are actively at work, each attended by a female. We Englishmen, happily, know very little of the guillotine, or we should probably find some resemblance between its action and that of the cropping-machine: A long, broad, and sharp blade, having the edge downwards, works very rapidly, with a chopping action: and the pelt being introduced between the blade and a support beneath, the fur is cut from it with a precision that nothing can exceed. The impression on the mind of a visitor is that the pelt must inevitably be chopped to shreds, but, by some admirable adjustment of mechanism, the fur is removed without the skin being cut. The female who attends the machine puts it in or out of work when required, guides the pelt through it, collects the filaments of fur, &c. Such outer fragments or small pieces of the pelt as do not lose their fur by the action of the machine, are laid on a table, and women, by the aid of small instruments shaped somewhat like a cheese-cutter, remove the remaining fur. The denuded skins are useless to the hatter, and are sold at a small price to sise-makers in the north of England.



[Cutting-Machine. *a*, the skin, passing between rollers, after the fur has been cut from it; *b*, the fur deposited in a light layer on an endless cloth.]



[Blowing-Engine. *a*, spot on which the fur is placed; *b*, box containing the revolving fan; *c*, hollow trunk through which the fur is blown; *d*, receptacle where the finer fur is deposited.]

We have said that the women in the 'pulling' room cut, tear, or pull out the long coarse hairs from the pelts, and that these hairs are useless to the hatter. But it is impossible completely to separate the coarse from the fine fur by this means; and, therefore, the fur, when cropped from the pelt by the machines, is conveyed to the 'blowing-room,' finally to effect the separation. This room is probably the largest in the factory, and presents a remarkable appearance. It is of small height, but measures, perhaps, fifty feet by forty, having eight hollow boxes or trunks extending nearly the whole length of the room. The action of these hollow machines is exceedingly beautiful, and may, perhaps, be understood without a minute detail of mechanism. A quantity of beaver or other fur is introduced at one end, near a compartment in which a vane or fly is revolving with a velocity of nearly two thousand rotations in a minute. We all know, even from the simple example of a lady's fan, that a body in motion gives rise to a wind or draught; and when the motion is so rapid as is here indicated, the current becomes very powerful. This current of air propels the fur along a hollow trunk to the other end of the machine, and, in so doing, produces an effect which is as remarkable as it is valuable. All the coarse and comparatively valueless fur is deposited on a cloth stretched along the trunk, while the more delicate filaments are blown to a receptacle at the other end. Nothing but a very ingenious arrangement of mechanism could produce a separation so complete as is here effected; but the principle of action is not difficult to understand. If there were no atmosphere, or if an enclosed place were exhausted of air, a guinea and a feather, however unequal in weight, would fall to the ground with equal velocity: but in ordinary circumstances, the guinea would obviously fall more quickly than the feather, because the resistance of the air bears a much larger ratio to the weight of the feather than to that of the guinea. As the resistance of air to a moving body acts more forcibly on a light than on a heavy substance, so likewise does air, when in motion, and acting as a moving force. When particles of sand and gravel are driven by the wind, the

lightest particles go to the greatest distance. So it is with the two kinds of fur in the 'blowing machine,' those fibres which are finest and lightest are driven to the remote end of the machine.

We have thus visited those parts of the factory in which the crude materials are prepared for the hatter, and will now, therefore, take our materials to the 'body-makers,' and witness the processes of forming them into a hat.

In one corner of the factory is a dark dingy room, where, around a steaming 'kettle,' we see six or eight men busily employed at some operation, the nature of which can scarcely be divined through the clouds of steam. We pass by them, however, and visit some upper rooms, where the fur and wool are worked up together. The 'body,' or 'foundation,' of a good beaver hat is now generally made of eight parts rabbits' fur, three parts Saxony wool, and one part of lama, vicunia, or 'red' wool. A sufficient quantity of these for one hat (about 2½ ounces) is weighed out and placed in the hands of the 'bower.' On entering the 'bowing-room,' a peculiar twanging noise indicates to the visitor that a stretched cord is in rapid vibration; and the management of this cord by the workman is seen to be one of the many operations in hatting wherein success depends exclusively on skilful manipulation. A bench extends along the front of the room beneath a range of windows, and each 'bower' has a little compartment appropriated to himself. The bow is an ashen staff, from five to seven feet in length, having a strong cord of catgut stretched over bridges at the two ends. The bow is suspended in the middle by a string from the ceiling, whereby it hangs nearly on a level with the work-bench, and the workman thus proceeds:—the wool and coarse fur, first separately and afterwards together, are laid on the bench, and the bower, grasping the staff of the bow with his left hand, and plucking the cord with his right by means of a small piece of wood, causes the cord to vibrate rapidly against the wool and fur. By repeating this process for a certain time, all the original clots or assemblages of filaments are perfectly opened and dilated, and the fibres, flying upwards when struck, are by the dexterity of the workman made to fall in nearly equable thickness on the bench, presenting a very light and soft layer of material. Simple as this operation appears to a stranger, years of practice are required for the attainment of proficiency in it.



The point in the routine of processes at which we have now arrived requires a brief consideration of the operation of felting, on which the whole manufacture of a beaver hat depends. Felting is a process whereby animal fibres are made to cohere and to form a kind of cloth, without the aid of weaving, plaiting, knitting, sewing, or any analogous processes—warmth, moisture, and friction being the means by which it is effected. There is reason to believe that the process of felting was known in early times, and that the tents of the Tartars, as well as some articles of clothing, were produced by these means; but the evidence on this point is rather indistinct. At what time felted wool was first employed for making hats it would be difficult now to say; but there is a legend current among some of the continental hatters which gives the honour to St. Clement, fourth bishop of Rome. Most fraternities love to have a patron saint, when they can find one; and those hatters who regard St. Clement in this light inform us that this holy man, being forced to flee from persecutors, found his feet to be so blistered by long-continued travel, that he was induced to put a little wool between his sandals and the soles of his feet. On continuing his journey, the warmth, moisture, motion, and pressure of the feet worked the wool into a uniformly compact substance. Finally, the wanderer, observing the useful nature of this substance, caused it to be introduced in the manufacture of various articles of apparel.

But leaving St. Clement and his felted 'inner soles,' we may remark that the philosophy of felting was not understood until the microscope was applied to the examination of animal fibres. It was then found that the fibre, whether of wool or fur, is surrounded by a vast number of minute teeth projecting obliquely from the central stem. As these teeth are very sharp and are turned in one direction, they present an obstacle to the motion of the fibre in that direction, but enable it to glide easily in the opposite one: just as an ear of barley, when placed stalk uppermost within the cuff of the coat-sleeve, will soon work its way up to the shoulder by the motion of the arm. In some woolly fibres the irregularities appear like concentric cups, rather than sharp teeth.



[Microscopic view of a fibre of beaver fur.]

When a heap of such fibres is rubbed and pressed, and the fibres made to curl slightly by the action of warmth and moisture, they twist around each other, and the teeth interlace so tightly as not to separate. So complete, indeed, is the entanglement of fibres thus produced, that a coat made from cloth manufactured solely by the felting process has been known to last in wear ten years.

The purpose which the serrated structure of hair or fur is intended to answer is matter for conjecture. With respect to the double fur of such animals as the beaver, the following opinion has been offered: that, as the beaver passes much of its time in the water, the little projections from the filaments of the inner fur may serve as receptacles whereby the water is prevented from reaching the skin, and that the outer fibres may perhaps act like valves, which, when closed, shield the animal from cold, and when open permit the evaporation of water from the inner fur, and likewise permit respiration to go on from the pores of the skin.

But whatever be the purpose which these arrangements answer in the animal economy, it is evident that the minute serrations on the fibres of fur and wool are the means of the felting: this being understood,

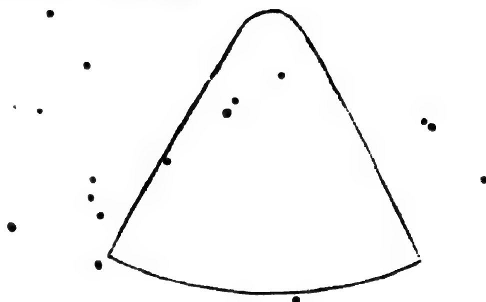
we shall be able to comprehend how the fur and wool are worked up into the form of a hat, and we therefore return to the 'bowing' room. The bowed materials for one hat are divided into two portions, each of which is separately pressed with a light wicker frame, and afterwards with a piece of oil-cloth or leather, called a 'hardening-skin,' until, by the pressure of the hands backwards and forwards all over the skin, the fibres are brought closer together, the points of contact multiplied, the serrations made to link together, and a slightly coherent fabric formed. These two halves, or 'batts,' are then formed into a hollow cap by a singular contrivance. One of the 'batts,' nearly triangular in shape, and measuring about half a yard in each direction, being laid flat, a triangular piece of paper, smaller in size than the batt, is laid upon it, and the edges of the batt, being folded over the paper, meet at the upper surface, and thus form a complete envelope to the paper. The two meeting edges are soon made to combine by gentle pressure and friction, and the other batt is laid over the first in a similar way, but having the meeting edges on the opposite side of the paper. The doubled layer, with the enclosed paper, are then folded up in a damp cloth and worked by hand; the workman pressing and bending, rolling and unrolling, until the fibres of the inner layer have incorporated with those of the outer. It is evident that, were there not a piece of paper interposed, the whole of the fibres would be worked together into a mass by the opposite sides felting together: but the paper maintains a vacancy within, and when withdrawn at the edge which is to form the opening of the cap, it leaves the felted material in such a form as to constitute, when stretched open, a hollow cone.

Our visit to this part of the factory has been somewhat lengthy; but the process of transforming the 'bowed' materials into a conical cap is so important, as illustrative of felting, that if this be clearly understood all that follows will be tolerably plain.

Few 'kettles' are the scene of such busy operations as the hatter's 'kettle,' and few would be so uninviting to a person fastidious as to cleanliness. Imagine a large kettle or boiler open at the top, having a fire beneath it, and eight planks ascending obliquely from the margin, so as to form a sort of octagonal workbench, five or six feet in diameter, at which eight men may work. The planks are made of lead near the kettle, and of mahogany at the outer part, and at each plank a workman operates on a conical cap, until the process of felting or 'planking' is completed. The 'kettle' contains hot water slightly acidulated with sulphuric acid; and, as far as words can do so, the following may convey an idea of the process:—The cap is dipped into the hot liquor; laid on one of the planks, and subjected to a long felting process: it is rolled and unrolled, twisted, pressed, and rubbed with a piece of leather or wood tied to the palm of the workman's hand, and rolled with a rolling-pin. (p. 41.) From time to time the cap is examined, to ascertain whether the thickness of the material is sufficient in every part: and if any defective places appear, they are wetted with a brush dipped in the hot liquor, and a few additional fibres are worked in. Considerable skill is required in order to preserve such an additional thickness of material at one part as shall suffice for the brim of the hat. When this felting process has been continued for about two hours, it is found that the heat, moisture, pressure, and friction have reduced the cap to one half of its former dimensions, the thickness being increased in a proportionate degree.

In many parts of the factory are 'stoving' rooms, in which, by the judicious arrangement of flues, a high temperature is maintained. To such a room the felted or 'planked' cap is taken, and, when dried, it presents the appearance of a fine, stout, and very strong kerseymere, having a drab or greyish colour. There can be little doubt that such a fabric is well calculated to serve the purposes of common broad-cloth, provided the means of manufacturing it of large dimensions were ensured; indeed a company is now established for this purpose.

Is not the reader still puzzled to know how or when the hat will make its appearance? We have described numerous materials, and have visited many departments of the factory, but have still produced only a drab-coloured, flexible, conical cap, about fifteen inches wide and fourteen high, and without a particle of beaver on its surface. The surface, colour, and form are, however, now about to be changed, in the order here indicated.



In the first place, the cap is taken to the 'water-proofing' room, where the odour of gums, resins, and spirits gives some intimation of the materials employed. Gum-lac, gum-sandrach, gum-mastic, resin, frankincense, copal, caoutchouc, spirits of wine, and spirits of turpentine, are the ingredients (all of a very inflammable nature) of which the water-proofing composition is made. This is laid on the cap by means of a brush, and the workman exercises his skill in regulating the quantity at different parts, since the strength of the future brim and crown depends much on this process.

After another 'stoving,' by which the spirit is evaporated, the exterior of the cap is scoured with a weak alkali, to remove a portion of the gummy coating, and thereby enable the beaver fur afterwards to cling to the woolly fibres of the cap.

Now, for the first time, we have to direct our attention to the fine beaver fur, the purchase and preparation of which are so costly. The washing, plucking, cropping, and blowing departments we have already visited, and have seen the fibres of fur divided into two qualities, of which the finer is that to which the hatter attaches value. This finer quality, which appears to have been formerly known by the name of 'flix,' was in bygone times, used not only for hats, but also for hosiery purposes, in allusion to which Dyer, in his poem of the 'Fleece,' has these lines:—

> "The beaver's flix
> Gives kindliest warmth to weak enervate limbs,
> When the pale blood slow rises through the veins."

The fur, being bowed very carefully by a smaller bow than that employed for wool, is spread out into a layer, and by means of the 'hardening-skin' is pressed and worked into a very delicate and light felt, just coherent enough to hold together. This layer, which is called a 'ruffing,' or 'roughing,' is a little larger than the cap body; and, to unite the two, another visit to the 'kettle' is necessary. The cap being softened by submersion in the hot liquor, the 'ruffing' is laid on it, and patted down with a wet brush, a narrow strip of beaver being laid round the inside of the cap, to form the underside of the future brim. The beavered cap is then wrapped in a woollen cloth, submersed frequently in the hot liquor, and rolled on the plank for the space

of two hours. The effect of this rubbing and rolling is very curious, and may be illustrated in a simple manner:—if a few fibres of beaver fur be laid on a piece



of broad-cloth, covered with tissue-paper, and rubbed gently with the finger, they will penetrate through the cloth and appear at the opposite side. So, likewise, in the process of 'ruffling,' each fibre of fur is set in motion from root to point, and enters the substance of the felt cap. The hairs proceed in a pretty straight course, and just enter the felt, with the substance of which they form an intimate union. But if the rolling and pressing were continued too long, the hairs would actually pass through the felt, and be seen on the inside instead of the out; the workman, therefore, exercises his judgment in continuing the process only so long as is sufficient to secure the hairs in the felt firm enough to bear the action of the hat-brush in after-days. Eighty or a hundred years ago, when beaver fur was cheap, an "old English gentleman" was wont to have his hat so well beavered, that as much nap felted through it to the inside as remained on the exterior; and when the hat showed symptoms of decay and old age, it was sent to the maker, who turned it inside out, and gave it nearly the pristine freshness of a newly-made hat.

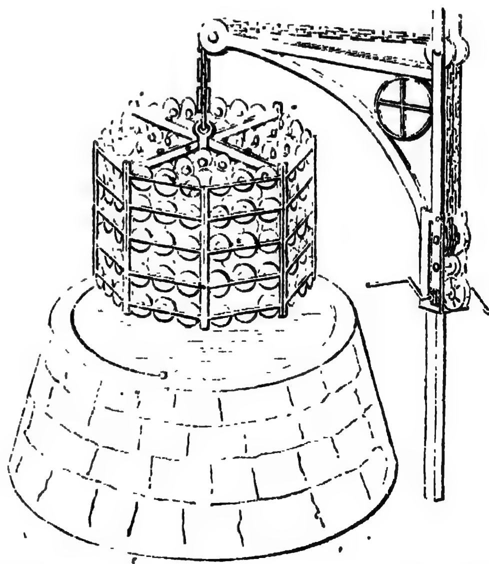
At length the cap is to assume somewhat the shape of a hat, before it finally leaves the 'kettle.' The



workman first turns up the edge of the cap to the depth of about an inch and a half; and then draws the peak of the cap back through the centre or axis, so far as not to take out the first fold, but to produce an inner fold of the same depth. The point being turned back again, produces a third fold; and thus the workman proceeds, till the whole has acquired the appearance of a flattish circular piece, consisting of a number of concentric folds or rings, with the peak in the centre. This is laid on the 'plank,' where the workman, keeping the substance hot and wet, pulls, presses, and rubs the centre until he has formed a smooth flat portion equal to the intended crown of the hat. He then takes a cylindrical block, on the flat end of which he applies the flattened central portion of the felt; and by forcing a string down the curved sides of the block, he causes the surrounding portion of the felt to assume the figure of the block. The part which is to form the brim now appears as a puckered appendage round the edge of the hat; but this puckered edge is soon brought to a tolerably flat shape by pulling and pressing.

We here terminate our visit to the 'blocking-shop.' The conical cap has been converted into a hat with a flat brim; and we take leave of the 'kettle,' with its hot acid liquor, its wet planks, its clouds of steam, and its ingenious attendants. We will suppose the hat to have been dried in a stoving-room near the great chimney, and will then place it in the hands of the 'shearer.' In an appropriate room, this workman raises and opens the nap of the hats, by means of a peculiar sort of comb; and then shears the hairs to any required length. Connoisseurs in these matters are learned as to the respective merits of 'short naps' and 'long naps;' and by the shearer's dexterity these are regulated. The visitor recognises nothing difficult in this operation; yet years of practice are necessary for the attainment of skill therein; since the workman determines the length of the nap by the peculiar position in which the long light shears are held. A nap or pile as fine as that of velvet can be produced by this operation.

The routine of processes now requires that we should visit the western range of buildings, on the opposite side of Bermondsey Street. At the remote end of the court-yard we see a dark and dismal-looking building, having very little light, and that little received through unglazed windows,—large boiling

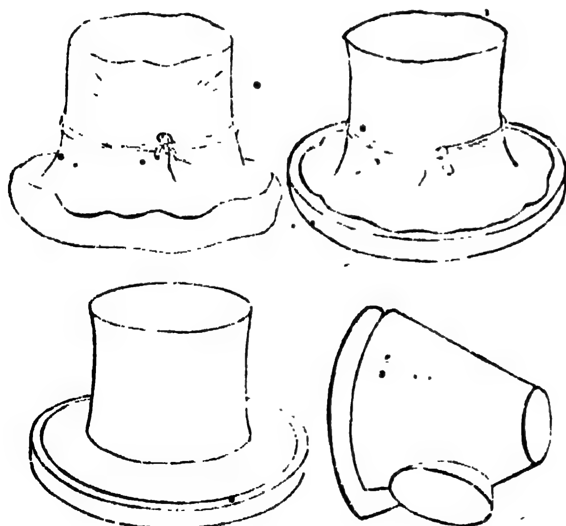


cauldrons, which it requires some nerve to look into,—a spacious brass cage or frame,—cranes and tackle for raising weights,—and a party of workmen whose persons and garments denote the staining effect of the hot dye to which they are exposed. This is the 'dye-house,' where the hats exchange their drab or grey

hue for a black one. The dyeing ingredients are logwood and some metallic salts, boiled in certain proportions in soft water. The logwood is imported from Campeachy in logs five or six feet long, and from five to ten inches thick; and a room in this extensive factory is appropriated to the cutting of these logs into fine shreds. For this purpose a powerful revolving wheel, provided with four cutting-blades inserted radially in one of its faces, is employed: the ends of the logs being applied to these blades, the wood is cut into shreds with astonishing force and quickness.

The cauldron with the dyeing ingredients being ready, a number of hats are fixed upon blocks, and the blocks, by means of a hole at one end of each, are fixed to brass pegs inserted in a large skeleton frame; so that the hats shall not touch each other. The frame is then lowered into the cauldron, and turned in such a manner as to allow all the hats to be submerged in the dye; after which the frame is hauled up, and the hats allowed to drain for thirty or forty minutes. This alternate submersion and partial drying is repeated twelve or fifteen times, until every fibre of the hat,—felt as well as nap,—is thoroughly dyed. This is followed by soaking and washing, which frees the surface from impurities; and the hat is then again 'stoved.' A few subsequent processes remove certain irregularities of shape, which the hat has acquired by repeated submersions in the dye-liquor.

We next visit a department of the building where 'finishers' are employed. A boiler is so arranged as to yield a jet of steam, over which the hat is held until thoroughly softened; and having a block shaped in every part nearly as the hat is intended to be, the 'finisher' pulls, rubs, and presses the hat until it assumes the form of the block: after which the nap is stretched, turned in any required direction, and smoothed, by various sets of brushes, small cushions of velvet, and heated irons. The adjoining cuts show three successive stages in the shaping of the hats, from the first rough 'blocking' to the production of a flat and smooth edged brim while on the finishing-block; likewise a beaver bonnet on the block by which it is shaped.



Once again we cross to the east range, and visit the first story of a large pile of buildings on the left hand. Here the busy hum of lively voices soon indicates to the visitor the sex of the inmates. We enter a large square room, full of litter and bustle, and find fifty or sixty young females employed in 'trimming' hats, that is, putting on the lining, the leather, the binding, &c. Some are sitting at long tables,—some standing,—others seated round a fire, with their work in their laps; but all plying the industrious needle, and earning an honourable subsistence.

A word or two respecting the employment of females in factories:—The texture of English society is such, that the number of reputable employments for females in the middle and humble ranks is very small. Most fathers and brothers are well aware of this; and women themselves, however desirous of contributing to their means of support, are cramped in their efforts by the limited range of avocations left open to them. The effect of this is such as never fails to result when the vineyard is too small for the labourers; the number of employments being few, so many females embark in them that the supply greatly exceeds the demand, and the value of female labour is thereby brought to a very low level. Under such circumstances it is important to inquire how far female labour may be available in factories where the subdivision of employments is carried out on a complete scale; and the factory now under consideration may afford some valuable hints on this point. The number of females employed here is not far short of two hundred, whose earnings vary from eight to fourteen shillings per week. The degree of ingenuity required varies considerably, so as to give scope for different degrees of talent. Among the processes by which a beaver hat is produced, women and girls are employed in the following:—plucking the beaver skins; cropping off the fur; sorting various kinds of wool; plucking and cutting rabbit's wool; shearing the nap off the blocked hat (in some cases); picking out defective fibres of fur; and trimming. Other departments of the factory, unconnected with the manufacture of beaver hats, also give employment to numerous females. Where a uniform system of supervision and of kindness on the part of the proprietors is acted on, no unfavourable effects are to be feared from such an employment of females in a factory. We cannot dwell longer on this matter: but in endeavouring to solve the important problem, "How can all live—and live honestly?" the nature and extent of female employments becomes a prominent subject for thought.

But we have not yet finished our hat. However carefully the process of 'blowing' may be performed, in order to separate the coarse fibres of the fur from the more delicate, there are always a few of the former left mingled with the latter: and these are worked up during the whole of the subsequent processes. Women are employed, therefore, after the hats have left the 'finishers,' in picking out, with small tweezers, such defective fibres as may present themselves at the surface of the hats.

Lastly, the hat is placed in the hands of a workman whose employment requires an accurate eye, and a fertile taste in matters of shape and form: this is the 'shaper.' He has to study the style and fashion of the day, as well as the wishes of individual purchasers, by giving to the brim of the hat such curvatures in various directions as may be needed. Simple as this may appear, the workman who possesses the requisite skill can command a high rate of wages. Fortunate is the 'shaper' who during a ramble to any place of fashionable resort can espy a new form of brim,—a curl here, a depression there,—and can imitate it at his work-bench,—he will please his employer, and profit himself.

Thus we arrive at the finished state of the beaver hat: and may now leave it to run its career through all weathers,—wet and dry,—cold and heat,—till it is destined to be replaced by a new one. Whether we are contented with the "shocking bad hat," or have to en-

dure the uneasy pressure of the stiff and glossy new one with fortitude, we must assuredly acknowledge that a beaver hat, whether considered with reference to the peculiar processes by which it is produced, or to the number of distinct sets of work-people (from twenty to twenty-five) through whose hands it passes, occupies an interesting and important place in the manufacturing history of this country.

In tracing the progress of a beaver hat, from the time when the materials are brought into the factory, till the hat is made, trimmed, and shaped, we have carried the reader through the greater part of this large establishment, and have shown the purposes to which the different departments are appropriated. It will, however, be desirable to say a few words respecting the silk-hat department.

As the number of beavers caught annually in America has greatly declined, the price of beaver-fur has of late years increased; and this circumstance has led to the production of a kind of hat which presents some resemblance to beaver, and yet may be produced at a low rate. This is the *silk* hat, the manufacture of which has gone through several stages of improvement, by which even an humble 'gossamer' now presents a neat and glossy exterior.

Silk is wholly incapable of the process of felting, and therefore cannot be employed in the same manner as fur and wool. The body of the silk hat is made either of coarse felted wool, or of some light material such as willow or stiffened cambric: and on this is placed a covering or hood of silk plush, sewn to the proper size for the hat. The Messrs. Christy weave their own plush at a factory in Lancashire, and send it to London in the form of a soft glossy material, which is cut and sewn by women to the requisite shape of the hats.

The bodies are made in a very rough way, by shaping the willow, cotton, or felted wool round blocks, and using a substance of extra thickness for the brim. A varnish cement is used to join the various parts; and a resinous stiffening composition is laid over the outer surface. Some time before the plush hood is laid on, the body is coated with a peculiar varnish, which, being softened by a heated iron after the hood is laid in its proper position, causes the plush to adhere to the foundation. This process is the most difficult in the silk-hat manufacture: for not only must the plush be made to adhere in every part, but the seam or joining up the side of the hat must be made as little visible as possible. No sewing is here employed; but the two meeting edges are brought precisely together, pressed down with a heated iron, and the silk shag brushed over the joint.

The minuter details of the silk-hat department we must pass over; for, so far as they differ from beaver hatting, they are of much less interest. Beaver hatters look down with some little scorn on the operations of silk hatting; and certainly, so far as regards manipulative skill acquired by long practice, the former branch of handicraft is by far the most remarkable; but still the silk hatter appeals with such moderation to the purse of the purchaser, that we cannot afford to lose sight of him.

The silk hatters, instead of occupying different parts of the factory, are congregated in one building along the southern side of the avenue leading to the great chimney; the building being divided into numerous small apartments. On the left of the chimney is a range of shops wherein are made common black glazed japan hats, such as are worn by sailors and persons much exposed to the weather. The bodies of these hats are made of common felted wool, and the outer covering is a thick coating of black varnish or japan, presenting a glossy surface. A high temperature is required for this purpose, and the situation and arrangement of the shops are such as to ensure this temperature.

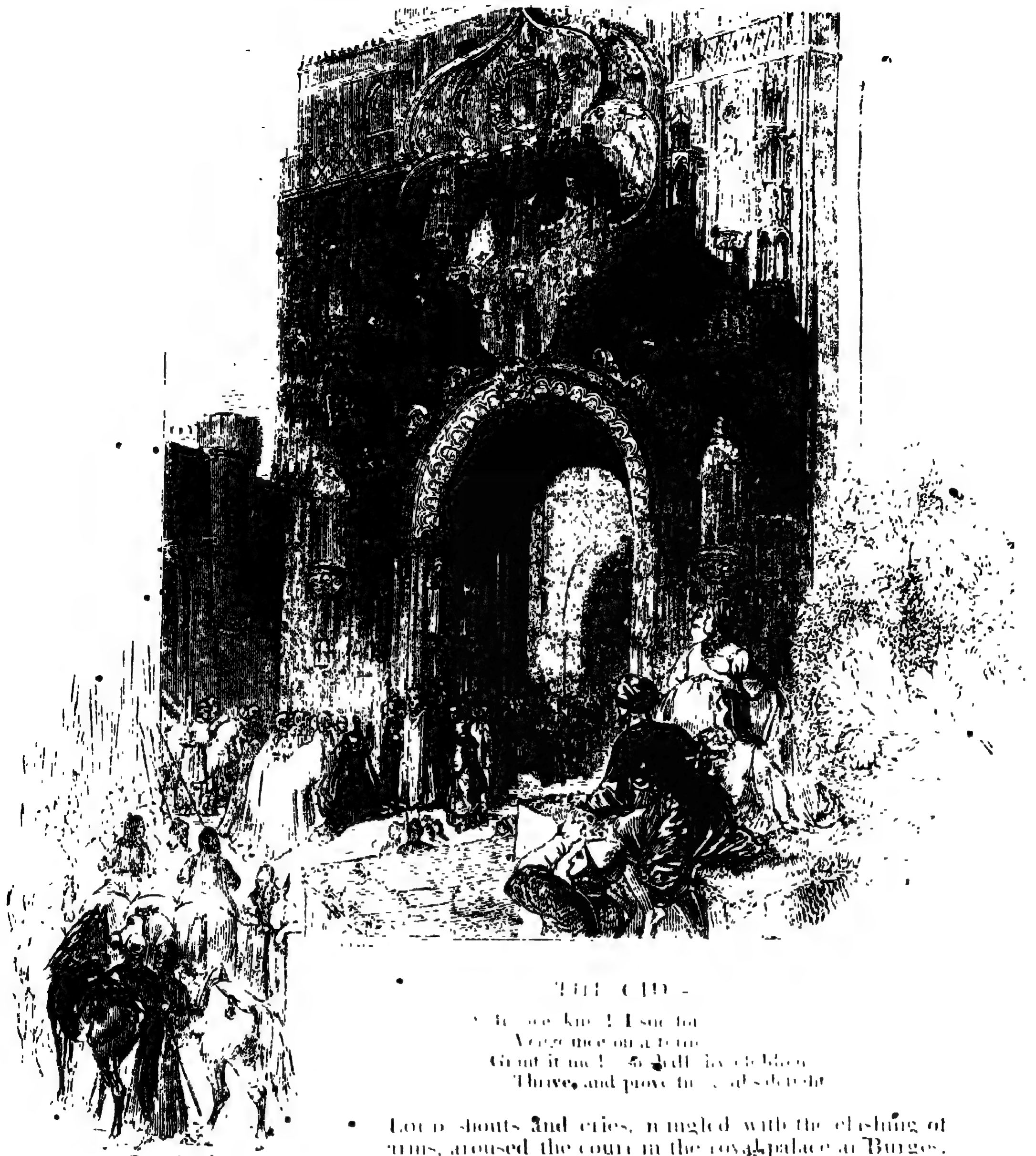
There is a distinct range of apartments in which seal-skin and other skin or fur caps are made. In these, unlike beaver hats, the fur is not cut from the pelt and then felted; but the pelt, with the fur remaining on it, is dressed into leather, and is cut up into such pieces as may, by subsequent processes, be formed into caps of various shapes.

Another department, entirely distinct from the rest, is that in which cloth caps of various kinds are made. This, generally speaking, is effected by needlework, and wholly differs from the processes of hat-making.

Here we terminate our visit to an establishment which presents so considerable a number of interesting processes. We have selected that of Messrs. Christy because, from the completeness and systematic arrangement of the details, it well illustrates the economy of a large factory,—the concentration of many departments within the walls of one establishment, the division of labour, the exercise of delegated authority by foremen to each department, and a general supervision of the whole by the proprietors. It is difficult to estimate the area of ground covered by all the workshops: but the reader may, from the foregoing details, form some idea of the numerous piles of building constituting the factory. There are many establishments in and near London, such as water-works, gas-works, ship-yards, tan-yards, brewhouses, distilleries, glass-works, &c., the extent of which would excite no little surprise in those who for the first time visited them. Indeed the densely packed masses of building forming the eastern districts of the metropolis, on both sides of the river, include individual establishments which, although they would appear like little towns if isolated, scarcely meet the eye of a passenger through the crowded streets.

We may here remark, as a completion of our notice of the hat manufacture generally, that the making of straw-hats, so much worn in country places, is in the hands of a class of persons altogether different from those engaged in the other branches of hatting. The finer qualities of straw, as well as white whalebone and white chip, are used for bonnets rather than for hats: but the mode of manufacture is nearly the same in all. There are delicate planing machines in use, by which any soft kind of wood can be cut into thin shavings, and the shavings, at the same time, cut into very narrow strips with great precision. Such is the case with willow, and also with whalebone. The willow of which the foundations of silk hats are frequently made is prepared in some such way as this; the narrow strips of willow being plaited, or perhaps we might say woven, into a square sheet sufficiently large for three hats. A slight glance at the willow foundation of a silk hat will show the nature of the material, and will also show that the mode in which the narrow strips are linked together resembles weaving rather than plaiting. It is not difficult to imagine, from these few details, that a hat or bonnet may be made from any such materials as whalebone, wood, straw, cane, rush, or others wherein a longitudinal fibrous structure is found; and the reader will readily call to mind numerous examples of such an application of fibrous materials.

In conclusion, we have to acknowledge the courtesy of the proprietors, and to express our pleasure at the harmonious and kindly feeling which evidently exists at this factory between the employers and the employed. The maintenance of such a feeling between parties thus connected is of the highest importance in a manufacturing country like England, and forms one of the most valuable ties in the structure of society.



THE CID.

"Justice, king! I sue for justice—
Vengeance on a traitorous knight.
Grant it me!—so shall thy children
Thrive, and prove thy soul's delight."

LOUD shouts and cries, mingled with the clashing of arms, aroused the court in the royal palace at Burgos. In great astonishment King Ferdinand and his *ricos-homes*, or nobles, descended to the gate, and there found Ximena Gomez, daughter of the Count Lozano, attended by a numerous train. She was clad in robes of black; a gauze veil of the same hue covered her head; her hair hung in long and dishevelled tresses over her fair neck, and tears were streaming from her eyes. She fell on her knees at the king's feet, crying for justice against him who had slain her father:

"Justice, king! I sue for justice—
Vengeance on a traitorous knight.
Grant it me!—so shall thy children
Thrive, and prove thy soul's delight.

Like to God himself are monarchs
Set to govern on this earth,
All the vile and base to punish,
And to guerdon virtuous worth.

But the king who doth not justice
Ne'er the sceptre more should sway—
Never should his nobles pay him homage—
Vassals never his hests obey.

Never should he mount [illegible]—
Never more should [illegible]—
Never with his queen hold converse—
Never sit at royal board."

Her eye then fell on Rodrigo, who stood among the attendant nobles:

"Thou hast slain the best and bravest
That e'er set a lance in rest,
Of our holy faith the bulwark—
Terror of each Paynim breast.

Traitorous murderer, slay me also!
Though a woman, slaughter me!
Spare not—I'm Ximena Gomez,
Thine eternal enemy!

Here's my throat—smite, I beseech thee!
Smite, and fatal be thy blow!
Death is all I ask, thou caitiff,—
Grant this boon unto thy foe."

Not a word did Rodrigo reply, but seizing the bridle of his steed, he vaulted into the saddle, and rode slowly away. Ximena turned to the crowd of nobles, and seeing that none prepared to follow him and take up her cause, she cried aloud, "Vengeance, sirs! I pray ye, vengeance!" A second time did the damsel disturb the king, when at a banquet, with her cries for justice. She had now a fresh complaint:

"Every day at early morning,
To despite me more, I wist,
He who slew my sire doth ride by,
With a falcon on his fist.

At my tender doves he flies it;
Many of them hath it slain.
See! their blood hath dyed my garments
With full many a crimson stain.

List!—The king who doth not justice,
He deserveth not to reign;" &c.

and she rebuked the king in the same strain as on the occasion of her former complaint. Fernando, partaking of the superstition of the age, did not relish her implied curses, and began to ponder on the course he had to pursue. "God in Heaven help me and lend me his counsel! If I imprison the youth, or put him to death, my Cortes will revolt, for the love they bear him; if I fail to punish him, God will call my soul to account. I will at all events send a letter forthwith, and summon him to my presence."

This letter was put into the hands of Diego Lainez. Rodrigo asked to see it, but the old man, suspecting some sinister design against his boy, refused to show it, saying, "It is nothing, save a summons for thee to go to Burgos; but tarry thou here, my son and I will go in thy stead." "Never!" replied the youth,—

"Ne'er would God or Holy Mary
Suffer me this thing to do.
To what place soe'er thou goest,
Thither I before thee go."

How tender is the filial affection here betrayed by the Cid, and yet is it by no means inconsistent with the fierce burst of passion which the paternal squeeze had before called forth.

That Rodrigo was not punished is evident, for Ximena repeated her visit to the king a third and a fourth time, still demanding vengeance. On this latter occasion she was attended by thirty squires of noble blood, arrayed in long robes of black which swept the ground behind them. The king was sitting on his high-backed chair listening to the complaints of his subjects, and dispensing justice, rewarding the good and punishing the bad, for "thus are vassals made good and faithful." The mace-bearers being commanded to quit the royal presence, Ximena fell on her knees and renewed her complaint:

"King! six moons have past away
Since my sire was reft of life,
By a youth whom thou dost cherish
For such deeds of murderous strife.

Four times have I cried thee justice—
Four times have I sued in vain;
Promises I get in plenty—
Justice none can I obtain."

The king thus comforts her:

"Say no more, oh, noble damsel!
Thy complaints would soften down
Bosoms were they hard as iron,—
Melt them were they cold as stone.

If I cherish Don Rodrigo,
For thy weal I keep the boy;
Soon, I trow, will this same gallant
Turn thy mourning into joy."

Fernando probably saw, what the damsel herself did not understand, that Rodrigo's hawking at her doves in his daily rides by her dwelling, was but a rough mode of courtship, intimating that he himself was flying at higher game in their mistress.

The second feat of arms achieved by our young hero was his conquest of five Moorish chiefs, or kings, as the romances term them, who had made a foray into the territory of Castile. They had ravaged the land nearly to the gates of Burgos, the capital, everywhere unresisted; had taken many captives and a vast booty, and were returning in triumph, when Rodrigo, then but a beardless youth, who had not seen twenty summers, mounted his steed Babieca, gathered a host of armed men, fell suddenly upon the Moors as they were crossing the mountains of Oca, routed them with great slaughter, and captured the five kings, with all their slaves and booty.

"Rodrigo Diaz, great his honour!
Beardless tho' he be, and tender,
To him princes five of Moordom
Fealty and tribute render."

The spoil he divided among his followers, but reserved the kings for his own share, and carried them home to his castle of Bivar, to present them as proofs of his prowess to his mother. With his characteristic generosity, which was conspicuous even at this early age, he then set them at liberty, on their agreeing to pay him tribute; and they departed to their respective lands, extolling his valour and magnanimity.

The fame of this exploit soon spread far and wide through the land, and, as martial valour was in those chivalrous times the surest passport to ladies' favour, it must have had its due effect on Ximena's mind, and will in a great measure account for the entire change in her sentiments towards the youth which she manifested on her fifth visit to the palace at Burgos. Falling on her knees before the king, she spoke thus:—

"I am daughter of Don Gomez,
Count of Gormaz was he hight,
Him Rodrigo by his valour
Did o'erthrow in mortal fight.

King! I come to crave a favour—
This the boon for which I pray,
That thou give me this Rodrigo
For my wedded lord this day.

Happy shall I deem my wedding,
Yea, mine honour will be great,
For right sure am I his fortune
Will advance him in the state.

Grant this precious boon, I pray thee!
'Tis a duty thou dost owe;
For the great God hath commanded
That we should forgive a foe.

Freely will I grant him pardon
That he slew my much-loved sire,
If with gracious ear he hearken
To my bosom's fond desire."

"Now I see," said the king, "how true it is what I have often heard, that the will of woman is wild and strange. Hitherto this damsel hath sought deadly vengeance on the youth, and now she would have him to husband. Howbeit, with right good-will, I will grant

what she desireth.' He sent at once for Rodrigo, who, with a train of three hundred young nobles, his friends and kinsmen, all arrayed in new armour and robes of a similar colour, obeyed with all speed the royal summons. The king rode forth to meet him, "for right well did he love Rodrigo," and opened the matter to him, promising him great honours and much land if he would make Ximena his bride. Rodrigo, who desired nothing better, at once acquiesced:

> "King and lord! right well it pleaseth
> Me thy wishes to fulfil;
> In this thing, as in all others,
> I obey thy sovereign will."

The young pair then plighted their troth in presence of the king, and in pledge thereof gave him their hands. He kept his promise, and gave Rodrigo Valduerna, Saldaña, Belforado, and San Pedro de Cardeña, for a marriage portion.

On the day appointed, Rodrigo was arrayed by his brothers for the wedding. Having doffed his well-burnished and graven armour, he put on first a pair of galligaskins, or long loose drawers, with fringes of purple, then his hose, and over both a wide pair of Walloon breeches, "such as were worn in that golden age," saith the romance. His shoes were of cow's leather and scarlet cloth, fastened over the instep with buckles. His shirt was even-edged, without fringe, embroidery, or stiffening, "for starch was then food for children;" his doublet or waistcoat was of black satin, with loose sleeves, and quilted throughout, the which doublet "his father had sweated in three or four battles;" over this he wore a slashed leathern jerkin or jacket, "in memory of the many slashes he had given in the field,* a German cloak lined with plush, and a cap of fine Flemish cloth with a single cock's feather, completed his costume. But we must not forget his sword Tizona, "the terror of the world," † which he girt about him with a new belt, which, says the romance, "cost him four quartos," a sum that might have been considerable in those days, but is now only a fraction more than an English penny. Thus gaily attired, he descended to the court of the palace, where the king, his nobles, and the bishop who was to perform the ceremony, awaited him on foot." All then moved in procession to the church to the sound of music, Rodrigo walking in the midst.

After awhile came Ximena, with a veil over her head, and her hair dressed out in large flaps hanging down over her ears. She wore an embroidered gown of fine London cloth, and a close-fitting spencer with a flap behind. She walked on high-heeled clogs of red leather. A necklace of eight medals or plates of gold, with a small pendent image of St. Michael, which together were "worth a city," encircled her neck.

The happy pair met, seized each other's hands, and embraced. Then said Rodrigo with great emotion, as he gazed on his bride—

> "I did slay thy sire, Ximena,
> But, God wot, not traitorously;
> 'Twas in open fight I slew him:
> Sorely had he wronged me.
>
> A man I slew—a man I give thee—
> Here I stand thy will to bide!
> Thou, in place of a dead father,
> Hast a husband at thy side.
>
> All approved well his prudence
> And extolled him with zeal:
> Thus they celebrate the nuptials
> Of Rodrigo of Castile."

Another romance, apparently of more modern date, describes the wedding costume of the Cid with equal minuteness, but very differently, dressing him in a doublet of dove-coloured satin, light scarlet hose, and slashed shoes of yellow silk, a short jacket with sleeves closely plaited beneath the shoulder, a folded handkerchief hanging from his girdle, a collar of gold and precious stones about his neck, and a short black cloak with hood and sleeves over all. This costume appears to belong to a less remote age than the former: but we have no means of determining the question, as the chronicles are wholly silent on the subject.

A third romance gives an animated description of the procession from the church to the royal palace, where the wedding feast was laid out, and tells us how the streets of Burgos* were strewn with boughs of sweet cypress—how flowered cloths were hung from the windows—how the king had raised a festive arch of great elegance at the cost of thirty-four quartos—how minstrels sung their lays to the honour of the wedded pair—and how buffoons and merry-andrews danced and played their antics, one with bladders in hand, another in the disguise of a bull, and a third in the likeness of a demon, to whom the king gave sixteen maravedis, "because he scared the women well." At the head of the procession marched the bridegroom and the bishop who had performed the ceremony, with their attendants; then followed a crowd of these boisterous merry-makers; and the king, leading the fair Ximena by the hand, with the queen and many a veiled lady, brought up the rear. As they passed through the streets, wheat was showered from the windows upon the bride—a mute but emphatic expression of a desire that she might prove prolific. The seeds fell thickly on the neck and into the bosom of the blushing Ximena, and the king officiously plucked them forth with his own hand; whereat exclaimed the wag Suero—

> "'Tis a fine thing to be a king, but Heaven make me a hand!'
> The king was very merry when he was told of this,
> And swore the bride, ere eventide, should give the boy a kiss.
>
> "The king went always talking, but she held down her head,
> And seldom gave an answer to anything he said.'
> It was better to be silent, among such a crowd of folk,
> Than utter words so meaningless as she did when she spoke.'

We quote from Lockhart, who has rendered with great spirit several of the romances of the Cid into English ballad metre.

Fall of Aerolites at Milan.—On the 17th of July, 1840, at seven o'clock in the morning, a loud detonation was heard, resembling a peal of thunder, and near Gelesecca three luminous projectiles were observed proceeding towards Somma, from east to west. The sound of the explosion extended for twenty or thirty miles round Milan. The largest aerolite was found near Ceresato, a village in the neighbourhood, having penetrated twenty inches into the earth. It weighed 10 lbs. 2 oz. The others were of smaller size, and fell near the larger one; but they have not been found.

* If we may rely on the authenticity of a suit of armour shown in the Royal Armoury at Madrid as that of the Cid, these slashes must have been fashionable in Spain at a very early age, for on the cuirass of that suit are engraved rude figures of men with short slashed breeches.

† Here the romance is guilty of an anachronism; for, according to the chronicle, the poem, and other romances, Tizona did not become the property of the Cid till many years after, when he won it from the Moorish king Bucar beneath the walls of Valencia.

* The romances are not agreed as to whether the wedding was celebrated at Burgos or Palencia, but the chronicles determine it to have been at the latter city.



[The Nativity.—Rembrandt.]

GRATUITOUS EXHIBITION OF PICTURES,

THE NATIONAL GALLERY.

THERE is no painter who has attained to a high reputation whose works are so likely, with the uninstructed in art, to mislead, both by their merits and defects, as the illustrious artist whose name stands at the head of this article. The Nativity, which is represented above, was formerly in the collection of the late Mr. Angerstein, and now, together with the other valuable pictures of that gentleman, forms a portion of the National Gallery. Of its merits as a work of art, which, in the opinion as well of critics as of practitioners of painting, are held to be of the highest order of excellence, we shall presently proceed to speak, and endeavour to point out the grounds of the admiration in which it is held, and then offer some remarks upon the principles which have guided Rembrandt in the management of his works.

As, however, this is the first time we have had occasion to criticise the productions of this painter, we will give a very short account of the leading events of his life. He was born on the 15th of June, 1606, and was the son of a miller, named Gerretz, who lived near Leyden, on the banks of the Rhine, whence, when the painter attained to reputation, he was distinguished by the title of Rembrandt van Ryn. He studied successively under Jacob van Swanenberg, Peter Lastman, and Jacob Pinas, in all not more than fifteen months. From these preceptors he learned manual dexterity, but the peculiar effects of his works, the prevalence of dark in his pictures, was the result of his own observation in his father's mill, where he had opportunities of seeing the strongest contrasts of light and shade. He worked for some time at his native place, but, having gone to the Hague, at the advice of a fellow-student, he there sold a picture for a hundred florins, and, soon after, obtained numerous commissions for landscapes and portraits, which he executed at home. In 1630 he settled in Amsterdam, and at the same time married, and undertook the tuition of many pupils, who paid one hundred florins a year each. One of his earliest and steadiest patrons was the burgomaster Six, for whom he painted the Woman taken in Adultery, which now forms another of the most splendid ornaments of the National Gallery. Rembrandt was scarcely less eminent as an engraver than as a painter but we have no occasion here to speak upon that sub

ject. He died at Amsterdam, having accumulated considerable wealth, in 1674. A tale has been told of him which has been related of other artists, and is, perhaps, about as true of him as of any other. It is, that finding, during his earlier career, his pictures were not purchased so promptly as he wished, he caused it to be given out that he was dead, ordered a sale of his paintings and engravings, and so enhanced their value.

The subject of the Nativity is one which has been frequently handled by Rembrandt, and by other painters of the same school; by them, perhaps, on account of its presenting an opportunity, from the homeliness of its locality, of indulging in their favourite representations of familiar life; by Rembrandt, without doubt, from its affording a noble field for the display of his peculiar power. In observing the work now before him, it will not fail to strike the intelligent spectator that the composition is lighted from two distinct sources; the chief splendour is derived from the glory emanating from the divine Infant, whilst the right-hand portion is illuminated by the lantern in the hand of the standing figure, and the background is further lighted by some means not comprised within the limits of the picture. This has enabled the painter to distinguish between the supernatural and the natural lights, and the various gradations of both, and the effect produced must be at once admitted to be masterly in the extreme. The first presents a greater purity of tint, and the latter a glowing richness, which, whilst it contrasts forcibly with the surrounding shadows, adds, by its increased yellowness, brilliancy even to the emanation proceeding from the cradled Redeemer. The background represents the interior of a stable, and the cattle give identity to the scene.

Rembrandt is said not only to have repudiated the beauties of Grecian and Italian art, but also to have ridiculed them: but whether so or not, certain it is he never, in his own practice, evinces purity of form, and very rarely justness of proportion. Indeed his figures are remarkable for their uncouthness, and sometimes deformity, rather than for their beauty, and he would almost appear to have preferred vulgarity to grace. He seems to have generally had defective models to work from, and to have scrupulously followed what he saw.

Thus disclosing the prevailing fault of the painter brings us to the point where we may describe what are his excellences above all others, and what is the principle upon which he constructed his works.

The great merit, then, of Rembrandt consists in his profound knowledge of harmony in colouring, and of his management of the lights and darks, technically called chiaro-'scuro. In the former, his pictures evidence his skill by the fact that the moment they meet the eye they produce a pleasing sensation. The untutored spectator is first struck by the glowing richness of the performance, before he proceeds to consider the deformity of the figures, and voluntarily admits that he is gratified without knowing wherefore he is pleased. In compositions such as that now under notice, namely, interiors lighted only in a small proportionate degree, this is more frequently the case than in other works of this master. A larger space, only partially illuminated, must naturally present powerful contrasts and such as the most uncultivated eye must at once understand: but in exterior views, where there is a much larger proportion of light, and in which, notwithstanding, strong oppositions of dark are to be found, it requires much greater knowledge of the principles of art to form a just estimate of their correctness. We have, however, now to speak only of the class of which the cut above is a brilliant example. In observing a picture of this class, the spectator after the first sensation of visual pleasure has subsided, should consider whether the effect depicted is accounted for by the subject itself, that is, whether, for the shadows he sees before him, there is a light placed in such a position in the picture, or indicated as being beyond its limits, as must necessarily produce such a shade; if he find that to be the case, he may be sure that the painter has achieved his end, he has gratified the eye and has satisfied the understanding. If, upon further inspection, he finds that the painter has so arranged his colours that the most brilliant and the lightest shall form a portion of that part of the picture from which or by which it is illuminated, and shall find the dark draperies and other objects so introduced as to combine with the shadows to form a contrast, he will, in some degree, perceive and understand what is meant by the term chiaro-'scuro. In a word, then, a person in viewing the works of Rembrandt must look for fidelity of effect, and not for correctness of drawing.

If we regret the absence of that dignity of form with which Raffaelle invests his Scripture characters, we must not pass over without notice the fact that as the great events of the life of the Saviour, from his birth in a stable to his death by the most shameful punishment of the cross, were characterised by lowliness, and as most of the important agents in the progress of Christianity itself were of humble station, as in the instances of Peter and Andrew and James and John, there is perhaps less blame attachable to Rembrandt for the familiarity of his figures in such subjects than would at first sight appear. He knew that the instruments of the divine revelation were of lowly birth and of mean occupation, and he therefore represented in his pictures such forms as his models presented undignified by any adventitious aid from his pencil. He painted for brilliancy of effect and splendour of colouring, and not for beauty of form or majesty of expression. It is, therefore, for the former qualities that he is to be prized.

The works of Rembrandt are open to observation for his neglect of the propriety of costume, but we must not on that account the less value the truth of what he does represent. It is unquestionably better that the verity of history should be preserved in all works of art, but all parts of a picture should represent a consistency of date; yet, because historic truth is violated, we must not be led into an opposite extreme, and refuse our approbation to the fidelity of the imitation which is before us. If this painter, like other artists of his own school, and eminent ones of the Venetian and Flemish schools, has violated history, still he has not violated painting in its rules, so long as the things he has represented are, in themselves, true to nature.

It is sometimes objected that no effect is to be observed exactly similar to that given by Rembrandt; that in no instance can we see such depth of shadow where there is positive light. To a certain extent this is true, and the reason is manifest, for no painting can exactly imitate positive light, though it may give the effect of it by the minute exactness with which the gradations from light to dark are depicted. If, by so much as the brightest part of a picture necessarily falls short of positive light, in the same degree the other parts of it are made so much darker than reality, the scale of proportion is preserved, and the work is therefore consistent in itself, and true as an imitation of nature. If this be borne in mind in watching the productions of Rembrandt, it will greatly tend to familiarise the untutored in art to the superb contrasts he displays.

Of the principle by which this great genius was guided, it will be necessary only to say that he con-

sidered the power of his picture was to be gained by an infinitely greater proportion of dark than light, a principle diametrically opposed to that by which Rubens was guided in his practice.

We avoid, as much as possible, technical phraseology, but there is one point of a practical nature to which the attention of a visitor to this picture may be drawn. It is the mode in which the artist worked. The glowing effect caused by the lights in his pictures is produced by the masterly use of what artists call glasing, that is, painting over opaque colour with rich transparent tints, a practice which originated with the Venetian school, and was adopted by those of Holland and Flanders. It is acknowledged that no other mode of operation will give equal brilliancy, and it cannot be denied that by no hand has it been more skilfully applied than that of the illustrious Rembrandt.

HOW IS A RAILWAY TRAIN PROPELLED?

[Continued from page 29.]

IN our previous article we trust we have enabled the reader to comprehend "what constitutes a steam-engine." It is not the application of steam-power to any particular purpose, but it is the production of a reciprocating motion. A portion of water in a boiler is exposed to the action of fire; steam is formed; this steam is admitted into a cylinder, through which a piston works; the steam drives up the piston, and is then converted into water by being put in communication with a cold vessel; a vacuum is thus formed below the piston, and this, and steam admitted above it, press down the piston; this second amount of steam is condensed; and a new series of similar movements occur. The piston thus being set in motion, a connecting rod communicates this motion to machinery, by which the motion is converted into some definite kind by cranks or other means. This is the great principle of the process; and by far the larger part of the beautiful but complicated mechanism seen in a steam-engine consists of matters of detail not involving the principle on which the engine acts, but tending to bring that principle to better account. Such an engine is a *condensing* engine. The application of steam-power to locomotion and to shipping frequently requires a modification of the arrangement, constituting a *high-pressure* engine, the nature of which will be seen hereafter.

How many a railroad traveller has marvelled at the hidden power which propels him and his companions at so rapid a rate! He books his place, pays his fare, enters one of a long string of vehicles, and presently feels himself to be in motion. Before and after him may be human beings, cattle, horses, private carriages, merchandise; yet all are driven on by the same impulse, and with a rapidity which, twelve years ago, we would have deemed almost chimerical. The traveller finds the train headed by an engine which appears to afford the moving power,—by a mechanical horse, in fact, which requires no other provender than coke and water; and he may naturally wish to gather a brief outline of the mode in which this most valuable species of horse performs its work. This outline we will endeavour to give.

In pages 28 and 29 of the present volume we explained the main points which constitute a steam-engine, as well as the mode in which the power there gained is made available for the production of circular motion. For a locomotive carriage another form of engine is necessary, principally on account of the inconveniently large space which a *condensing* apparatus would occupy. It will be remembered, that the steam which moves the piston in a common steam-engine is afterwards conveyed to a vessel surrounded by cold water, the chilling effect of which re-converts the steam into water, and thereby produces a vacuum beneath the piston. But in an engine destined for motion, both size and weight become matters of importance; and if the condensing apparatus can be dispensed with altogether, the engine will obviously be rendered smaller and lighter.

The only mode of getting rid entirely of the principle of condensation in the steam-engine is to employ steam of such a power as greatly exceeds the pressure of the atmosphere. All the beams, rods, &c. of a steam-engine are subject to atmospheric pressure, and in Newcomen's engine it was this pressure, acting on one side of a piston while the other side was in *vacuo*, which caused the descent of the piston. In Watt's engines the atmosphere is excluded, but still the force of the steam does not greatly exceed that of the atmosphere. In the locomotive-engine, however, the condensing apparatus being absent, it is found that powerfully heated steam is required, which steam having a great pressure, such engines are termed *high-pressure*, in contradistinction to condensing or *low-pressure* engines. These terms are generally but not universally correct, for the principle of high-pressure is sometimes combined with that of condensation.

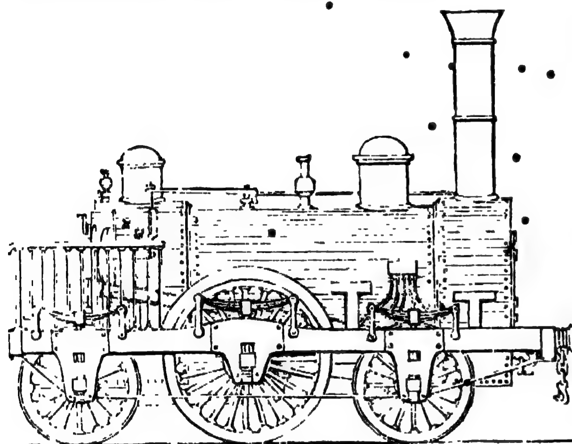
When water boils freely in an open vessel, the steam rising from it has a pressure or elasticity equal to that of the atmosphere. Under ordinary circumstances, when the barometer indicates about 30 inches pressure, this occurs at the temperature of 212°. Under no circumstances can boiling water, in an open vessel exposed to the free action of the atmosphere, greatly exceed this temperature. But a closed vessel produces a change of effect; for if it be sufficiently strong to resist a bursting pressure from within, the water is capable of attaining a far higher temperature; indeed we know of no limit to this increase but the inability of the vessel to bear the pressure. In general the steam of boiling water exerts a pressure of about 15 pounds on every square inch of surface exposed to it; but with an increase of temperature in a close vessel, this pressure increases very rapidly; for instance, at 226° it is about 20 pounds; at 238°, 25 pounds; at 257°, 35 pounds; at 300°, 70 pounds on the square inch.

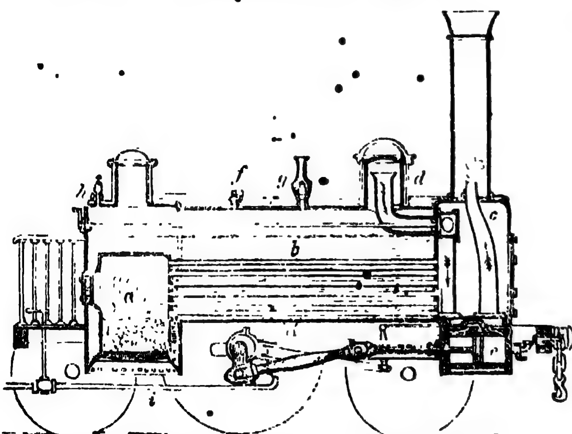
Now this rapidly increasing pressure is the source of power in the high-pressure engine; and one of the chief problems which the maker has to solve is, what must be the strength of a close boiler, to bear such and such a pressure from within? In practice, high-pressure engines are employed with a force or pressure of steam varying from twenty to one hundred and twenty pounds on the square inch. Let the reader clearly understand this point, and he will see how great is the pressure which the boiler has to sustain. If the boiler were of a cylindrical shape, and measured six feet long by three in diameter, it would have a surface of more than 9000 square inches: if steam of 120 inches pressure were within the boiler, it would exceed the atmospheric pressure from without by 105 pounds per inch; which would give ($105 \times 9000 = 945,000$) the enormous force of nearly one million pounds tending to burst the boiler from within.

A power, similar to this in its origin, but of less intensity, is that to which locomotive-engines owe their value. A piston-rod is connected by a crank with the wheels of the carriage, in such a manner that when one moves the other must move also. The object is therefore to give a reciprocating motion to the piston; and this is effected by admitting high-pressure steam into the cylinder wherein the piston works, so that a portion of steam, after moving the piston, may escape into the open air, and leave room for the piston to return by the force of a new supply of steam admitted on the other side of it.

Although James Watt conceived the idea of such an

employment of high-pressure steam, yet Messrs. Trevithick and Vivian appear to have been the first to put it in action, about forty years ago. They constructed a steam-carriage, which proved a precursor to some others used on the tramways in the north of England and in Wales; but the subject was not fairly tested until the railway system developed its wonderful power. While the projectors of the Liverpool and Manchester Railway were engaged in that important undertaking, they were in doubt as to what moving power might best be applied to the carriages, whether horse-power, stationary engines with traction ropes, or locomotive engines. The first two were successively abandoned, and the last resolved on; but in order to obtain the utmost amount of power with the least expenditure of fuel, a premium was offered to the owner of any locomotive-engine which should, on a certain trial-day, produce the most favourable results. The trial took place in October, 1829, and the premium was awarded to Messrs. Stephenson and Booth, for the performance of the 'Rocket' engine. Since that time, numerous lines of railway have been opened; and such gradual changes and improvements have been made in the locomotive-engines, as to bring them to the form represented in the annexed cut. The upper figure shows the external appearance, familiar to all railroad travellers; the lower figure is a longitudinal section, through the middle of the engine.





[a, Fire-box; b, boiler; c, smoke-box; d, steam chamber; e, cylinder and piston; f and g, safety valves; h, steam-whistle; i, feed-pipe.]

The larger part of the engine is occupied by the boiler, made generally of iron, but sometimes of copper. At the hinder end of the boiler is a fire-box, so arranged as to be surrounded by water at every part except a door at which the fuel is introduced, and an open grating at bottom, the object of this water envelope being to prevent as much as possible the radiation and loss of heat. A man stands on the little stage or gallery at the back of the engine; and a carriage called a *tender*, containing coke and water, comes next after the engine, between it and the passenger carriages. The operations may be conceived to go on in the following manner.

The feed-pipe conveys water from the tender into the boiler by the action of a small forcing-pump placed beneath the latter, and worked by the piston-rod. Supposing then the boiler to have its proper quantity of water, the fire-box to have been supplied with coke, and a fire lighted, the smoke and heated air soon fill the fire-box, and then traverse a number of brass tubes which pass from end to end of the boiler, that is, from the fire-box to the smoke-box. These tubes are sometimes as many as a hundred and twenty in number, and about an inch and a half in diameter; and their object is to present as much heated surface as possible to the water in the boiler. The smoke and air, after losing a great portion of their heat, pass into the smoke-box, from thence upwards into the chimney, and thence into the open air. This mode of tubing the boiler is one of the greatest improvements which have been introduced in locomotive engines, since the extent of heated surface causes the water to boil in a surprisingly short time.

So much for the fire and its appendages: now for the steam. As the inside of the boiler is wholly shielded from the atmosphere, the water may be made to attain as high a temperature as the strength of the boiler will admit; and the space between the water and the roof of the boiler becomes filled with steam of very high pressure. This steam is mixed with a good deal of spray from the water, and in order to effect a separation, the steam is made to ascend into a steam-chamber before it descends to the cylinder. After the separation from the spray, the steam descends the steam-pipe in the direction of the arrows, and then enters a little chamber, where, by the action of an ingenious sliding valve, it passes alternately before and behind the piston into the cylinder. The piston is thus driven alternately backwards and forwards; and at each motion the steam, after having performed its office, passes into a waste pipe, and goes upwards in the direction of the arrow into the chimney, the latter thus serving to carry off both steam and smoke.

The piston being set in motion backwards and forwards, the rod to which it is connected acts, by the intervention of a crank, on the large central driving-wheels, which are thus made to revolve, and consequently the whole machine to be set in motion. The puffs or 'pantings' which we hear several times in a second, are occasioned by the escape of the steam from the cylinder, after it has performed its work, into the chimney. There are two cylinders and two cranks on opposite sides of the machine; but the description of one set will avail for the other also.

The engine-man, on the little stage behind the boiler, has several pieces of mechanism under his immediate control. By means of the steam-whistle (*h*) he can admit steam into a small receptacle, where, passing through a minute aperture, and striking against a sharp edge, it produces a piercing noise, which acts as a warning signal. Near this whistle is a handle which, by means of a rod, opens or shuts a valve in the steam-pipe, and thereby regulates the admission of steam to the cylinder. Gauge-cocks are placed at the back of the boiler, by which the engineer knows how much water is in the boiler; and if the quantity be deficient, another handle, near his foot, enables him to open a communication between the water-tank in the tender and the feed-pipe by which the supply is renewed. At the upper part of the boiler are two valves,

so regulated that when the steam exceeds a certain pressure, these valves are opened, and the steam escapes. One valve is under the control of the engine-man, but the other (g) is locked up, thus acting as a check against the engine-man, should he desire to increase the rapidity of the engine (and therefore the pressure of the steam) beyond proper limits. There is reason to believe that in some cases this valve likewise is, very improperly, placed at the discretion of the engine-man.

A provision for opening and shutting the valves in the cylinder several times in a second, another piece of mechanism for reversing the motion of the vehicle, a brake for retarding the revolution of the wheels, &c., are also portions of this beautiful engine; but what we have briefly described constitute the essentials, by which the general principle of action is regulated. The motion of the locomotive engine being once produced, the manner in which the tender and the long train of carriages are set in motion, by being linked to it and to each other, need hardly be told. With regard to the high velocity attained, we must refer it to three conjoined causes, viz. the powerful action of steam as a prime mover, the near approach to a level on which the carriages move, and the smoothness of an iron rail-track, compared with a gravel road.

Children should be inured as early as possible to acts of charity and mercy. Constantine, as soon as his son could write, employed *his* hand in signing pardons, and delighted in conveying, through *his* mouth, all the favours he granted. A noble introduction to sovereignty, which is instituted for the happiness of mankind.—*Jortin.*

DOGS, FOREIGN AND DOMESTIC.

[Continued from p. 11.]

If the long-muzzled breeds of our dogs be deemed the nearest to the primitive wild stock, whatever that may have been, it will follow that, in proportion as the domestic varieties lose this characteristic elongation of the head, and have the muzzle abbreviated, and the forehead and volume of the skull itself enlarged, they recede from their original type, and may be presumed to have been more influenced by the many causes which are involved in domestication. They are, in fact, more completely domesticated, and, if the term be allowed, civilized. Such are the dogs comprising the section of which the engraving gives characteristic examples. In our former paper we alluded to the shepherd's dog, which Buffon regards as nearest to the primitive stock, but which is more remote, if our ideas be correct, than he supposes. This valuable and intelligent dog is placed by F. Cuvier in the second section, distinguished by the head being very moderately elongated, the forehead being elevated, and the cerebral cavity comparatively voluminous. In referring the shepherd's dog to this section, we consider F. Cuvier to be right, but at the same time we think that it is to be regarded as a link between this and the previous group. Its muzzle is more elongated and sharper than in the spaniel; its ears are short and erect, or semi-erect, and its general contour is light, strength and activity being combined. Still its skull is developed, and its intelligence is extraordinary. Of the discrimination, sagacity, and faithfulness of these dogs, many authenticated accounts are current. The shepherd's dog knows its master's flocks, probably by the mark impressed upon the wool; it will single out a sheep, under the direction of its master, from the rest, keep it separate, or disengage it again from the flock, should it regain and mingle with them; it will keep two flocks apart; and, should they coalesce, re-divide them. It will watch and defend them from strange dogs or foxes, and it will drive them to any place required.

We knew, some years since, a dog of the shepherd's breed, which belonged to a man who had a large herd of cows under his charge. During the summer they were depastured on very extensive fields (in Cheshire) communicating with each other, and morning and evening this dog, at the bidding of his master, would collect them all together and gently drive them to the accustomed milking-place. If, when he had driven them for some distance, he discovered that one was missing, he would run back and traverse the fields till he met with the object of his search, which he would conduct to the herd, and then pursue his ordinary duty.

Closely allied to the shepherd's dog is the cur, or drover's dog. This useful animal is larger than the shepherd's dog; the hair is generally shorter, and the tail, even when not cut purposely, often appears as if it had been so. Bewick, who was well acquainted both with the drover's and the shepherd's dog, speaking of the former, says, "many are whelped with short tails, which seem as if they had been cut, and these are called in the north self-tailed dogs." The same writer is disposed to consider this breed as a true or permanent kind, and he informs us that great attention is paid to it. It seems to us, however, that the drover's dog is, in reality, a cross between the shepherd's dog and some other race, perhaps the terrier. It often partakes largely of the characters of the shepherd's dog, but is taller in the limbs. These dogs bite severely, and always attack the heels of cattle, so that a fierce bull is easily driven by them. They are singularly quick and prompt in their actions, and, as all who have watched them in the crowded noisy tumultuous assemblage of men and beasts in Smithfield must have observed, they are both courageous and intelligent. To their masters, who often ill treat them, they are faithful and attached.

The Siberian dog, as depicted by Buffon, is closely allied to the shepherd's dog, but is larger; and, from the inclemency of its country, more densely coated with long shaggy hair, which felts like wool. A fine female dog of this breed in our possession is singularly faithful and intelligent, but very noisy, pleasure being expressed by a loud barking, continued, if the animal be not checked, during a walk of two or three miles. She is an excellent house-guard, and her bark on the approach of strangers is very different from that of pleasure. So great is her indifference to cold, that she does not hesitate to plunge into the Thames, with the thermometer far below the freezing-point, nor does she suffer the slightest inconvenience; a heap of snow or the frost-bound earth is preferred to a snug kennel as a sleeping-place. It is not without difficulty that she is restrained from chasing sheep and cattle, and will often, to our annoyance, slink off, when unperceived, and scour the fields, driving oxen or sheep before her.

Of the present section of dogs, the shepherd's dog and its allies seem to form a distinct group, in which we suspect the lurcher should be also included, though this may possibly be a mixed breed between the greyhound and rough terrier, or greyhound and shepherd's dog. Bewick figures and describes it. He says that it is less and shorter than the greyhound, with stronger limbs; its body is covered with a rough coat of hair, most commonly of a pale yellow colour; its aspect is sullen, and its habits, whence it derives its name, are dark and cunning. "As this dog possesses the advantage of a fine scent, it is often employed in killing hares and rabbits in the night-time." It steals silently and cautiously upon them while they are feeding, and then suddenly darts forward and seizes them. It is said that a well-trained dog will make terrible havoc in a preserve for hares, or in a warren



[a, Spaniel; b, Fox-Hound; c, Pointer; d, Lurcher; e, Newfoundland; f, Shepherd's Dog; g, Talbot Hound; h, Blood Hound.]

The Spaniels form a distinct group of the present section. Among them we include the pure setter. The spaniels are remarkable for docility and an affectionate disposition, and these good qualities, combined with their beauty, render them general favourites. The fur is long and silky, sometimes curled or crisped; the ears are large and pendent, and the expression of the countenance is pleasing and intelligent. All possess an excellent scent, and especially the setter, the qualities of which are well known to the sportsman.

The water-spaniel belongs to this group; its utility to persons engaged in the pursuit of water-fowl is extremely great; it swims well, is very hardy, and is an excellent retriever, bringing the birds which have been shot on the water to its master. The French poodle may be referred to the spaniels. It is, we consider, very nearly allied to the rough water-dog figured by Bewick, the grand barbet of Buffon (whose figure, indeed, Bewick has copied), and of which the petit barbet of Buffon is a smaller variety.

The rough water-dog is a most valuable and intelligent animal. It is robustly made, and covered universally with deep curly hair. It exceeds the water-spaniel in size and strength, but has the same aquatic habits and docility. It is much used as a retriever by the shooters of water-fowl. No dog is more easily taught to fetch and carry than this; and its memory is surprising. If any small article be shown it, and put into a certain place, this dog, after the lapse even of several days, or when at considerable distance from the spot, will, when bidden, hasten to its search out the article, and return with it to his master. Mr. Bell relates an anecdote of one of these dogs finding a piece of money which its master had lost, and retaining it for a whole day in its mouth, till its master's return, when it joyfully laid the coi.

at his feet. During the whole of the time it had taken no food, from unwillingness to part, even for a few minutes, with the property of which it deemed itself the guardian.

It is impossible for us to enter into an enumeration of all the breeds of spaniels; we may notice, however, the Marlborough and King Charles breeds, which, from their beauty and liveliness, are in the highest esteem. In all essentials there is a close similarity among the dogs of this group, and the differences consist rather in size than in any other characteristics. Naturalists have been inclined to regard the Newfoundland, the Labrador, and the Alpine dogs, as true spaniels. We do not consider this opinion as correct. They form a little group by themselves, and in many points the Alpine, or Mount St. Bernard's dog, approaches to the mastiff. We have seen several fine examples of this breed;—their size is equal to that of the largest mastiff; the muzzle is deep; the ears are pendulous; the fur is rather long and wiry; the eye is full and very expressive; and the form of the body and limbs indicates great strength. The peculiar robustness of form, and especially the depth of the muzzle, and character of the fur, serve to distinguish this noble dog from the largest of the spaniels. The Labrador dog, often called Newfoundland, presents the same general features, excepting that the fur is longer and softer, and sometimes disposed to curl. A fine dog of this breed brought from Labrador gave us the following admeasurements:—total length, including tail, six feet three inches; height at shoulder, two feet six inches; length of head, from occiput to point of nose, eleven inches; circumference of chest, three feet one inch. In Labrador these powerful and intelligent dogs are used for drawing sledges loaded with wood, &c., and are of great service to the settlers. The Newfoundland dog is essentially the same as the Labrador, but, if our observations be correct, it does not attain to so large a stature. Of the extraordinary sagacity of the dogs of this group,—of the courage and intelligence of the Mount St. Bernard's dog,—of the fidelity, usefulness, and aquatic propensities of the Labrador and Newfoundland breed, nothing need be said. All are familiar with instances in which human beings have owed their life to the exertions of these devoted creatures;—all are acquainted with their noble qualities.

Another distinct group of dogs belonging to the present section is that which contains the hounds. Several varieties of hound now exist; and of these the beagle, the harrier, and the foxhound are familiar to all our readers. No country equals England in the swiftness, spirit, and endurance of its hounds; and in no country is so much attention paid to the various breeds, especially to the harrier and foxhound. The beagle was formerly a great favourite, but is now little used. It is of small stature, but of exquisite scent, and its tones, when heard in full cry, are musical. It has not, however, the strength or fleetness of the harrier, and still less so of the foxhound, and hence it does not engage the attention of the sportsmen of the modern school, who, unlike Sir Roger de Coverly, are impetuous in the field, preferring a hard run to a tame and quiet pursuit. The beagle was only employed in hunting the hare, as is the harrier, but the foxhound is trained both for the deer and the fox. The strength and powers of scent of the foxhound are very great, and many astonishing instances of the energy and endurance of these animals are on record.

Formerly two noble varieties of the hound were common in England, which are now seldom seen. We allude to the old English hound, or talbot, and the blood-hound.

Of the old English hound, which is described by Whittaker, in his 'History of Manchester,' as the original breed of our island, we some years since saw a fine specimen in Lancashire. It was tall and robust, with a chest of extraordinary depth and breadth, with pendulous lips, and deeply-set eyes; the ears were large and long, and hung very low; the nose was broad, and the nostrils large and moist. Its voice was deep, full, and sonorous. The general colour was black, passing into tan or sandy-red about the muzzle and along the inside of the limbs. Shakspere's description of the hounds of Theseus, in the 'Midsummer Night's Dream,' is true to the letter, as referring to this breed, with which he was, no doubt, well acquainted:—

> "My hounds are bred out of the Spartan kind,
> So flew'd, so sanded; and their heads are hung
> With ears that sweep away the morning dew;
> Crook-kneed, and dewlapp'd like Thessalian bulls;
> Slow in pursuit, but match'd in mouth like bells
> Each under each."

It was with hounds of this breed that "to hunt the deer" "Earl Persie took his way;" and it was with these dogs that our ancestors chased the larger kinds of game, with which, when our island was almost one vast forest, the country abounded. For delicacy of scent and acuteness of hearing, they were unrivalled, and their great power rendered them a match even singly for the strongest of their 'quarry.'

The bloodhound, with equal delicacy of scent, has shorter ears, and a taller and perhaps lighter figure than the talbot. This celebrated dog was once in great request, and was employed by our ancestors, not only in the pursuit of game, but of men. Laid on the track of the felon or marauder, it kept up a steady persevering chase, and was not baffled without difficulty. Sir Walter Scott, in his graphic description of the "stark moss-trooper," Sir William of Deloraine gives as a proof of his merit, that he

> "By wily turns and desperate bounds
> Had baffled Percy's best blood-hounds."

And the same accomplished knight thus eulogises his dead enemy:—

> "'Twas pleasure as we look'd behind
> To see how thou the chase would wind—
> Cheer the dark blood-hound on his way,
> And with the bugle rouse the fray."

Blood-hounds, or, as the Scotch called them, Sleuth-hunds, were kept at one time in great numbers on the Borders; and fugitive kings, as well as moss-troopers, were often obliged to study how to evade them. Bruce, it appears, was repeatedly tracked by these dogs, and on one occasion only escaped by wading for a considerable distance up a brook, and thus baffling the scent. "A sure way of stopping the dog was to spill blood upon the track, which destroyed the discriminating fineness of his scent. A captive was sometimes sacrificed on such occasions. Henry the minstrel tells a romantic story of Wallace, founded on this circumstance. The hero's little band had been joined by an Irishman named Fawdon, or Fadzean, a dark, savage, and suspicious character. After a sharp skirmish at Black-Erne Side, Wallace was forced to retreat with only sixteen followers. The English pursued with a border blood-hound. In the retreat Fawdon tired, or affecting to be so, would go no farther; Wallace having in vain argued with him, in hasty anger struck off his head, and continued the retreat. When the English came up, their hound stayed upon the dead body." (*Notes to the* 'Lay of the Last Minstrel.')

The specimens of this dog which we have seen were of a sandy-red colour with black muzzles.

We have hitherto said nothing respecting the pointer. The old Spanish pointer is decidedly related to the hound, and the breed now generally used by sports-

men is originally from this source; but as the fox-hound is rendered by assiduous cultivation lighter, smaller, and more fleet than the talbot (its origin, as we presume), so the modern pointer may be regarded as a lighter and more active branch of the heavy slow Spanish pointer, which indeed is now seldom seen.

We may conclude our present section with the terrier and its varieties. Two breeds of this spirited and well-known dog are common: one, called the Scotch terrier, is covered with rough wiry hair, and having short legs and a long body; the other, called the English terrier, is sleek, with longer legs and a more elegant form; its colour is black, with tanned limbs, and a tanned spot over each eye. In both the muzzle is moderately long and sharp, and the ears are erect; the eye is quick; the power of smell acute. For unearthing the fox or badger, and for worrying rats and "such small deer," these dogs are celebrated, and they make excellent house-guards.

The turnspit, a variety now seldom seen, is allied most nearly to the terrier, but is destitute of the boldness and spirit of that breed. It is long-bodied, with short bowed legs and a curled tail, and the iris of one eye is often of a different colour from that of the other.

In taking a review of the dogs to which we have directed our attention, as comprising the present section, we cannot fail to observe that they are endowed respectively with qualifications or habits certainly not innate, but the result of education at least originally, which education, continued through a series of generations, has produced permanent effects. For example, no dog in a state of nature would point with his nose at a partridge, and then stand like a statue, motionless, for the dog would gain nothing by such a proceeding. Man, however, has availed himself of the docility and delicacy of scent peculiar to a certain breed, and has taught the dog his lesson, and the lesson thus learned has become second nature. A young pointer takes to its work as if by intuition, and scarcely requires discipline. Hence, therefore, must we conclude that education not only effects impressions on the sensorium, but transmissible impressions, whence arise the predispositions of certain races. Education, in fact, modifies organization, not that it makes a dog otherwise than a dog, but it supersedes, to a certain point, instinct, or makes acquired propensities instinctive, hereditary, and, therefore, characteristics of the race. The effect of this change of nature is not to render the dog more independent, not to give it any advantage over its fellows, but to rivet more firmly the links of subjection to man.

It is not to the pointer alone that these observations apply; all our domestic dogs have their own acquired propensities, which, becoming second nature, make them, in one way or another, valuable servants. No one, we presume, will suppose that the instinctive propensities implanted by nature in the shepherd's dog make it not a destroyer but a preserver of sheep. On the contrary, this dog, like every other, is carnivorous, and nature intends it to destroy and devour. But education has supplanted instinct, to a certain point, and has implanted a disposition which has become an hereditary characteristic, and hence a shepherd's dog of the true breed takes to its duties naturally. But a shepherd's dog could not, delicate as its sense of smell is, be brought to take the place of the pointer in the field, even though it were subjected to training from the earliest age; nor, on the other hand, could a pointer be substituted with equal advantage in the place of a shepherd's dog, as the assistant of the drover. Each is civilised, but in a different style, and education has impressed upon each a different bent of mind, a different class of propensities.

The Bayonet.—(From a Correspondent.)—At page 490 of the last volume of this work, in an article on the Horse Armoury in the Tower, the first invention of the socket bayonet is attributed to the French, during the campaigns of William III. in Flanders. Now the earliest of these campaigns was that of 1693, which was terminated by the battle of Neerwinden, on July 29th; whilst there is every reason to believe that the socket bayonet was constructed in Scotland, in the winter of 1689, by General Mackay; in consequence of the defeat which he sustained in the Pass of Killiecrankie, on the 26th of July in that year, having been partly occasioned by the inability of his soldiers to fix their dagger-hilted bayonets with sufficient promptitude to receive the charge of Dundee's Highlanders, against whom they had just fired a volley. It is by no means unlikely that the ring-bayonet may have been introduced into the French army during the war in Flanders, and that it may even have been employed in the field by them, before it was generally adopted in our service. But this should by no means detract from the veteran Mackay, in having devised a means to prevent our soldiers from sustaining defeat through the same cause which had led to his overthrow. The authority for the above statement is a MS. journal of Mackay himself; cited by R. Chambers, Esq., in his history of Dundee's insurrection, in Constable's Miscellany. [The authority for the previous statement was Meyrick. The difference of date is only of a few years.]

Atmospheric Phenomena in Greenland.—The curious effects of the unequal refraction, produced by the varying temperature and density of the different strata of air, constitute one of the most singular phenomena of Greenland. They usually occur on the evening or night after a clear day, and are most frequent on the approach or commencement of easterly winds. Not only does this state of the atmosphere elevate places above their proper position, bringing objects sunk below the horizon into view, but also changes and contorts their appearance. It most usually produces an increase in the vertical dimensions of the object affected, elevating the coast, and giving it a bolder and more precipitous outline; making the fields of ice rise like cliffs of prismatic spar, whilst the higher and more irregular masses assume the forms of castles, obelisks, spires, or, where the pinnacles are numerous, a forest of naked pines. In other places it displays the resemblance of an extensive city, crowded with public edifices, whilst huge masses of rock seem suspended freely in the air. Sometimes ships are seen with their rigging curiously distorted, an additional sail, or an inverted image of the vessel, many times larger than the real object, appearing above. Such are a few, and but a few, of the changes produced, "as from the stroke of the enchanter's wand:" but many others occur which it is impossible to describe, their forms altering with inconceivable rapidity, and one deceitful image disappearing only to be replaced by another.—*Edinburgh Cabinet Library.*

Moral Algebra.—When difficult cases occur, they are difficult chiefly because, while we have them under consideration, all the reasons *pro* and *con* are not present to the mind at the same time; but sometimes one set present themselves, and at other times another, the first being out of sight. Hence the various purposes or inclinations that alternately prevail, and the uncertainty that perplexes us. To get over this, my way is, to divide half a sheet of paper by a line into two columns, writing over the one *pro*, and over the other *con*; then, during three or four days' consideration, I put down, under the different heads, short hints of the different motives that at different times occur to me, for or against the measure. When I have thus got them all together in one view, I endeavour to estimate their respective weights, and where I find two (one on each side) that seem equal, I strike them both out. If I find a reason *pro* equal to some two reasons *con*, I strike out the three. If I judge some two reasons *con* equal to some three reasons *pro*, I strike out the five; and thus proceeding, I find at length where the balance lies; and if, after a day or two of further consideration, nothing new that is of importance occurs on either side, I come to a determination accordingly. And though the weight of reasons cannot be taken with the precision of algebraic quantities, yet, when each is thus considered separately and comparatively, and the whole lies before me, I think I can judge better, and am less liable to make a rash step; and, in fact, I have found great advantage from this kind of equation in what may be called moral or prudential algebra.—*Franklin.*



[Lord Bacon and his Localities. The Portrait from the engraving by Marshall, 1641, prefixed to Bacon's 'Life of Henry VII.' Beneath the portrait his arms, taken from Marshall's portrait; the Chancellor's Mace, Autograph of King James, and other insignia of office, from original authorities. At the top, to the left, York House, from a drawing by Hollar, engraved in Wilkinson's 'Londini Illustrata;' to the right, Old Gray's Inn, from a print in Pennant Collection, Brit. Mus. At the left side, Gorhambury, from a drawing of the remains of the original mansion by Neale, 1810, engraved in 'Beauties of England and Wales;' and Highgate, with the Old Church, from a print by Chatelaine, 1740. At the bottom, St. Michael's Church, St. Alban's, from a drawing in George III.'s Collection, Brit. Mus.]

LOCAL MEMORIES OF GREAT MEN.

Bacon.

A more impressive or valuable lesson, one of wider or more permanent application in the conduct of life through the trials and temptations of the world, it would perhaps be impossible to find, than in the history of the greatest of modern philosophers. There, the extent of misery and degradation which may await the highest intellectual powers, if they are not steadily directed to the fulfilment of the great purposes for which they were given, receives a more vivid illustration than it has ever before received, than we may expect it will ever receive again: it is sufficient for one

such man to have thus suffered, for one age to have exhibited so melancholy a spectacle. But is it only the great ones of the earth who are to take the lesson home? Is it they only who palter with their better judgments, who but too often make their actions but one continued satire on their thoughts, consciences, and, we might add, wishes? The answer is obvious. Of all errors or vices, this, in a lesser or greater degree, is probably the most common. How few of us are there, it may be feared, who do not, for the sake of worldly interests, sometimes quit the plain high road of strict duty and right, calculating, as doubtless Bacon calculated, that it would be easy to return uninjured; who do not, like him, yield but a divided allegiance, seeing perhaps, as he saw, the folly of the hope in others of serving both "God and Mammon," yet, like him, clinging not the less pertinaciously to it ourselves. To all then but those who are free from temptation or above it, the "Local Memories" of this great and in many respects illustrious man will be full of matter for the deepest reflection: of their interest it would be idle to speak.

Francis Bacon, the youngest son of Sir Nicholas Bacon, who held the office of keeper of the great seal for twenty years during the reign of Elizabeth, was born at York House in the Strand, on the 22nd of January, 1561. The history of this mansion is not unworthy of notice. It was originally an inn or palace of the bishops of Norwich, and exchanged by them with the archbishops of York for Suffolk House, Southwark: from that time it was called York House. Here Bacon was born, and spent some portion of his boyhood; and here, later in life, he lived in the greatest magnificence: after his fall it was purchased by Buckingham, who appears to have rebuilt or greatly improved it. It was next settled by the parliament upon its general, Lord Fairfax, and then, curiously enough, it reverted, by the marriage of Fairfax's daughter with the second earl of Buckingham, into the hands of the Villiers family. The house, or at least the greater part of it, was now pulled down, and upon the site, and within its precincts, were built the four streets which still bear that nobleman's name and title—George, Villiers, Duke [of], Buckingham: the "of" gives name to an alley. The only remains of this beautiful mansion are York Stairs, one of Inigo Jones's most admired works, and a part of the old ceiling, still preserved in the house No. 31, Strand, at the corner of Villiers Street. Whilst yet a boy, Bacon attracted the notice of the queen, who called him her young lord keeper, and had frequent occasion to admire his ready address and dexterity. She once asked him how old he was: "I am just two years younger than your majesty's happy reign," was the ready reply. The future courtier is here already visible. The future philosopher was no less so in the fact of his leaving his play-fellows to go to a vault in St. James's Street to investigate into the cause of an echo he had there discovered. In his thirteenth year he entered Trinity College, Cambridge. Of the very early development of his mighty intellect, Dr. Rawley, afterwards his chaplain and biographer, records an interesting proof. "Whilst he was commorant at the University, about sixteen years of age (as his lordship hath been pleased to impart unto myself), he first fell into the dislike of the philosophy of Aristotle; not for the worthlessness of the author, to whom he would ever ascribe all high attributes, but for the unfruitfulness of the way, being a 'philosophy (as his lordship used to say), only strong for disputations and contentions, but barren of the production of works for the life of man.' In which mind he continued to his dying day." It is said, and the preceding statement makes it probable, that he at this time formed the outline of his own system, which was in direct antagonism to the ancient philosophy, as we shall hereafter see. On leaving college he visited the Continent, from whence he was recalled in 1580 by news of the sudden death of his father. His prospects were sadly clouded by this event. He now desired to employ his great talents in literature and politics. The ruling statesmen, the Cecils, were relatives of Bacon, and he naturally expected their assistance. But he was one of those able men whom he says, and with every appearance of truth, it was their especial policy to suppress. All his applications, and they were numerous, and somewhat servilely humble, were disregarded, and he found himself compelled to study the law. He accordingly entered Gray's Inn, a place to which from that time to his death he was much attached, and with which many of his pleasantest memories were associated. The apartments on the first floor of the house No. 1, on the north side of the square, are said to be still in the same state that they were when he last visited them. The walls have a handsome oak wainscoting, and over the chimney-piece is a beautiful ornament. In the garden, which he greatly adorned, and where doubtless many of his happiest hours were spent, there were but a few years ago some trees planted by his own hand. The books of the Society abound with his autographs, written in connection with the business of the Inn, of which he was even then recognised as the most distinguished member. Although the hall in which Bacon so often sat no longer presents its former aspect, there is still much left of the original structure.

We must now pass rapidly over many important events in Bacon's life. He was called to the bar in 1582, made a bencher in 1586, appointed counsel-extraordinary to the queen in 1590, and at last received something like a recognition from the Cecils of his claims upon them, in the grant of the reversion of the office of registrar of the Star Chamber. This, as Bacon says, "mended his prospects, but did not fill his barn," for it was twenty years before he began to receive the salary, which amounted to 1600*l.* a year. When the office of solicitor-general became vacant, Bacon's early, warm-hearted, and noble-minded friend, the Earl of Essex, made the most strenuous efforts to obtain it for him, but the Cecils were adverse and all-powerful. To mitigate the disappointment, Essex gave his friend an estate worth 1800*l.*, and in so doing, Bacon says, "the manner was worth more than the matter." When Essex's fortunes began to decline, Bacon remonstrated with him in a kindly manner, and even when, in spite of all his advice, Essex's rashness broke out into open insurrection against the queen, Bacon still used all his influence and address to mitigate its consequences. But now there was a great change. He had perhaps by this time received a hint that he was treading upon dangerous ground in his efforts to save his friend, at all events from the present period commences that series of shameful acts which blacken the great philosopher's memory. By the queen's desire he appeared as counsel against his friend, and as if this alone was not sufficient, he strove to secure a conviction by means perfectly unjustifiable from their unfairness and dishonesty. Bacon's benefactor was executed; and then, to turn the current of popular opinion which ran strongly in Essex's favour, Bacon having before so well proved his zeal in pressing changes affecting his friend's life, was now desired to direct his talents against his friend's fame: 'A declaration of the practices and treasons attempted and committed by Robert, earl of Essex,' accordingly appeared from his pen!

In 1592 Bacon was returned member for Middlesex. Upon the accession of James in 1603, his prospects greatly improved. He had used his utmost address to

impress the monarch with a favourable opinion of him, whilst Elizabeth was yet alive, and he was successful. Whatever James might be in other respects, he certainly appreciated Bacon's wit, learning, and genius. The first mark of favour was the honour of knighthood. Bacon's reasons for desiring this honour are amusing: he was the only untitled person in his mess at Gray's Inn, and he had "found an alderman's daughter, a handsome maiden, to his liking," whom soon after he married. Other honours followed. He was appointed king's counsel in 1604, solicitor-general in 1607, attorney-general in 1612, and he was now evidently determined to let no lack of zeal in the service of the "powers that be" prevent a still further advancement. An aged clergyman, named Peachum, was apprehended for having in his possession a written sermon containing passages of, as it was alleged, a treasonable nature. It was desired to punish him, but neither the facts nor the law were sufficient to meet the case fairly. Bacon undertook to get rid of the first difficulty by torturing the prisoner; of the second, by tampering, *beforehand*, with the judges. In the last only he succeeded, for Peachum had, as Bacon complained to the king, "a dumb devil." The poor old man was however tried, convicted, and sentenced to death; but for very shame the court felt compelled to restrain its desire for his execution. So the poor but brave old man languished the little remainder of his days in prison. The friendship of Buckingham, the king's favourite, now helped to smooth Bacon's way to the highest offices. In 1617 he was appointed the keeper of the great seal, and in the following year lord high chancellor. His ambition had now obtained all that it had desired. Most enviable appeared his lot to the eyes of the world. He now lived at York House, the place of his birth, and there it was that in 1620 he celebrated his sixtieth birth-day with the greatest magnificence, and in the midst of a splendid circle of friends. Ben Jonson, who was there, wrote some of the happiest of his panegyrical rhymes on the occasion. All things, he says, seemed to smile about the old house, "the fire, the wine, the men;" and the scene altogether impressed him so greatly that he thus speaks of Bacon and his state:—

"England's High Chancellor, the destined heir,
In his soft cradle, to his father's chair,
Whose even thread the fates spin round and full
Out of their choicest and their whitest wool."

During all these events, his literary reputation had been steadily growing. His Essays were published in 1596; 'The Advancement of Learning,' in 1605; 'The Wisdom of the Ancients,' in 1610. Other works had also appeared, and shortly after his elevation to the chancellorship was sent forth 'The Organon,' which justified the boasts of his youth, that it should be "the greatest birth of time," and on which he had spent his leisure hours from that time upwards till its final completion in his old age. To return to what we may call his worldly history: he had been by this time raised to the rank of Viscount St. Alban's, and there closes the course of his prosperity.

In 1621 James found himself compelled from want of money to assemble a parliament for the first time for six years. It was a period of great dissatisfaction. Many grievances were complained of by the people, and their representatives were determined to examine into the matter thoroughly. They did so; and, in the course of their labours, resolved to inquire into the state of the courts of law. A committee was appointed, and on the 15th of March of the very year which had witnessed the publication of the book that was destined, more than any other of his publications, to work an entire revolution in philosophy, Bacon was publicly charged with corruption in his high office. One of the cases brought forward will show the nature of the whole. A gentleman of the name of Aubrey, having a suit depending in Chancery, and being almost ruined by expenses and delays, was advised by some hangers-on of the chancellor to make him a present. He obtained with great difficulty a hundred pounds from a usurer, which was given to his lordship, Aubrey being at the same time assured by some of the chancellor's dependants that all would go right. "A killing decree," however, was pronounced against him, and in his despair the unfortunate man exposed the whole. Numerous cases of a similar or worse description were also substantiated, until Bacon wrote to the peers, as they were pursuing the inquiry, and confessed their general truth. A still more direct admission was demanded and obtained, and then a committee of the House waited upon the chancellor at York House, where he was enduring all the agonies of the eternal shame he saw he had brought upon his head: their object was, to be sure that he had really signed the confession. "My Lords," said the broken-hearted man, "it is my act, my hand, my heart. I beseech your Lordships to be merciful to a broken reed." He was sentenced to pay a fine of £40,000, to be confined in the Tower for life, and rendered incapable of holding any office or of sitting in parliament. He was, however, soon released from the Tower, with orders to banish himself from the court, and ultimately every part of the sentence was remitted.

We now follow him to Gorhambury, the magnificent seat of his father, the home of a considerable portion of his boyhood, and which was now to be the resting place of his old age. During all the bustle and splendour of office, he had frequently found means to escape to the quiet and meditation which there awaited him, and for the better enjoyment of such opportunities, he built, about half a mile from Gorhambury, a house which cost him ten thousand pounds. There he now endeavoured to alleviate the anguish which preyed upon his heart, by collecting around him some of the most distinguished of the many friends which not even his disgrace had alienated, and who were most proud of the office which he sometimes imposed upon them of writing to his dictation. Hobbes, a scarcely less distinguished name in philosophy, then a young man, was often employed in this way. Bacon never again entered into public life, but continued to the very day of his death to occupy himself in his literary and philosophical labours. "The great apostle of experimental philosophy was destined to be its martyr. It had occurred to him that snow might be used with advantage for the purpose of preventing animal substances from putrifying. On a very cold day early in the spring of the year 1626, he alighted from his coach near Highgate, in order to try the experiment. He went into a cottage, bought a fowl, and with his own hands stuffed it with snow. While thus engaged, he felt a sudden chill, and was soon so much indisposed that it was impossible for him to return to Gray's Inn. The Earl of Arundel, with whom he was well acquainted, had a house at Highgate. To that house Bacon was carried. The Earl was absent, but the servants who were in charge of the place showed great respect and attention to the illustrious guest. Here, after an illness of about a week, he expired early in the morning of Easter-day, 1626. His mind appears to have retained its strength and liveliness to the last. He did not forget the fowl which had caused his death. In the last letter that he ever wrote, with fingers which, as he said, could not steadily hold a pen, he did not omit to mention that the experiment of the snow had succeeded

"excellently well."* In his will he wrote, "For my burial, I desire it may be in St. Michael's Church, St. Alban's: there was my mother buried, and it is the parish church of my mansion-house of Gorhambury, and it is the only Christian church within the walls of Old Verulam. For my name and memory, I leave it to men's charitable speeches, to foreign nations, and the next ages." He was of course buried where he desired; his faithful friend and secretary, Sir Thomas Meautys, erected a monument to his memory,† and when he died, was himself buried at the feet of the illustrious man he had so loved and honoured.

According to the views of the author of the eloquent essay from which we have just been quoting—an essay on Bacon's Life and Philosophy, which should be bound up with every edition of his works—the chief characteristic of that philosophy was its direct antagonism to all that had previously existed under the same name. "The ancient philosophy disdained to be useful and was content to be stationary. It dealt largely in theories of moral perfection, which were so sublime that they never could be more than theories." Bacon's, on the contrary, was essentially a philosophy of utility and progress—he thought the 'fruit' of more consequence than the leaves and flowers, he desired to multiply human enjoyments, to mitigate human suffering, to improve man's estate. And hence it is that he is justly regarded as the author of modern philosophy, that from the day of his death his fame has been progressively increasing, and will doubtless continue so to do, until he is recognised in every age and country as one of the most illustrious benefactors of the human race.

ABSTINENCE FROM FOOD.

Although ordinarily, for the due sustenance of the vital powers, it is necessary that supplies of food should be periodically administered; yet the power of abstaining from sources of nourishment has been sometimes possessed to a great extent. The attention of the curious has been excited from a remote period even to the present times, by cases in which life has been said to have been protracted during extraordinary long periods without the aid of food; and the annals of this and of other countries abound with such narrations. Thus we are told that one Cicely de Ridgeway, who was condemned for the murder of her husband, in the reign of Edward III., fasted forty days. This, as is stated in a record preserved in the Tower, being attributed to miraculous agency, she was pardoned. One John Scot, being involved in debt, took sanctuary at Holyrood, where he fasted for thirty days. The rumour of this reaching the king's ears, the man was placed under surveillance in Edinburgh Castle, and again fasted for the space of thirty-two days. He was set at liberty, and, repairing to Rome, exhibited his powers of abstinence to Clement VII. In 1603, James Roberts, a surgeon, published, "with the king's privilege," 'A true and admirable historie of a mayden of Consolens, in the province of Poictiers, that, for the space of three years and more, hath lived, and yet doth [live], without receiving either meat or drinke, of whom his majesty in person hath had the view, and (by his command) his best and chiefest phisitians have tryed all means to find whether this fast or abstinence be by deceit or no.'

The 'Philosophical Transactions,' vol lxvii., contain a full account of the case of Janet M'Leod, who swallowed nothing but a little water for four years. Although the evidence upon which many cases are based seems satisfactory, yet, when the facts related so entirely pass the bounds of credibility, we are justified in rejecting them. This is seen in a remarkable manner in the case of Anne Moore, the fasting woman of Tutbury. This woman pretended to have lived some years without food, and had been subjected to a watching by her sceptical neighbours, from which ordeal she came out triumphantly. Her credit now firmly established, crowds visited her from all parts, so that she was enabled to place a considerable sum of money in the funds, resulting from the fees she charged for admission into her apartment. Yet, after all, this woman, when submitted to a second well-concerted system of watching, instituted by persons of the first respectability, confessed the imposture, and admitted that her friends had from time to time clandestinely supplied her with small portions of food. There can be no doubt that the great majority of these marvellous cases were also impositions. But yet there is as little doubt that persons have been known to pass an immense period without food, especially if they have had access to moisture, which seems to have a wonderful power in assisting the endurance of privation. Thus Ann Moore herself indubitably fasted nine days while under her last surveillance. So, too, many accounts we have of persons buried by snow or other accidents confirm the latter part of the observation. Elizabeth Woodcock, to whom this calamity occurred, near Cambridge, supported life for eight days, by sucking portions of the snow by which she was surrounded. A young man, confined in a coal-pit by a burst of water, remained there undiscovered for twelve days; and a woman, who lost her way in a coal-pit, preserved life for three days by means of her own milk, and for fifteen other days upon water. In experiments instituted by Redi, he found that fowls deprived of all food, solid or fluid, died on the ninth day, while one to which he gave water lived to the twentieth day.

Persons subject to various diseases can occasionally bear the diminution of food to a great extent, but it is in those who are the victims of hypochondria or insanity that this is seen in the most remarkable degree.

Dr. Willan records the case of a young man who for sixty-one days took no other food than water to which a little orange juice was added. This person, as well as a hypochondriac cited by Doebel, who fasted forty days, died soon after a return to food. Ponteau mentions a madman who took nothing for forty-seven days but a pint and a half of water per diem, and for thirty-eight of these days remained in the same position. Dr. Francis relates the case of a negro woman, who, believing herself the subject of Obi magic, refused all sustenance for several weeks, during which time she only took two cups of water slightly medicated with wine.

Famine is, perhaps, the most horrible form in which death can make its approaches. The narrations of the dreadful sufferings endured from shipwrecks, sieges, and famines are but too familiar. A prostration of the vital powers is followed by wild delirium and restlessness, during which the most powerful instincts of nature have been so disregarded, that a mother has been known to devour her offspring. Stupor and coma close the terrible scene. The duration of life under such circumstances varies in different individuals, being usually short in proportion to the youth and robustness of frame; and thus, as Dr. Paris observes, Dante was true to nature when, in picturing the fate of Count Ugolino and his sons, he represents the unhappy parent as surviving his children for some days. Women, too, are thus able to support abstinence longer than men: most of the reported cases of long abstinence have occurred in women. Terrible as is this description of death, it has been sometimes en-

* 'Edinburgh Review,' July, 1837, article "Lord Bacon."

† An Engraving of the Monument is given in vol. i., p. 130.

countered for the purposes of suicide. In the 'Transactions of the Acad. Roy. de Med.' cases are recorded of persons thus persisting, for an immense period, until their object was accomplished. But, perhaps, the most determined case on record is that of Viterbi, a Corsican, who, condemned to die for a murder of which he declared himself innocent, resolved thus to terminate his existence. Although, during the first few days, he suffered the greatest torment from hunger, he resisted the meats, &c. which were offered him, and continued calmly to await and record in a journal his approaching end. This was delayed, in some measure, by his yielding, on one or two occasions, to the tormenting thirst which assailed him (a constant symptom in those suffering from starvation), and drinking a little wine. He lingered on, possessed of his mental faculties until the twenty-first day, when he expired.

The ancient physicians held the highest opinion of the powers of abstinence in producing longevity and in curing disease, an opinion in which many moderns have coincided: the longevity of the early Christians, who retired from persecution into the deserts of Arabia, and of the primitive saints and hermits, who lived with such frugality, has been often cited. On the other hand, many consider that however desirable during the existence of acute disease, abstinence too rigid in its observance or too long in its duration may be productive of much mischief when the body is in health. One of the strongest advocates of abstinence, or rather of temperance in living, speaking, as he did, with all the force derived from practical experience, was the Venetian nobleman Louis Cornaro, who lived in the sixteenth century. By his voluptuous course of life, he had brought himself to such a state that, at the age of forty, his physicians announced to him that without a thorough change in his mode of living his days would indeed be short. With a determination which nothing could shake, he at once commenced the abridgement of his daily food, until he had reduced it to a most insignificant quantity. In proportion as he did this, he found his health, strength, and spirits improve, and lived in the full enjoyment of every faculty to the advanced age of a century. Convinced of the immense benefit he had derived from his regimen, he composed three or four little treatises upon the subject, in which he warmly recommends its adoption. he writes sensibly, contending only for the principle of abstemiousness, and not for the exact mode and degree which he himself had employed. In his later publications he rejoices in the benefit his advice had conferred upon many. Not only did he find his bodily health improve, but also the disposition of his mind. When at the age of seventy-eight, urged by his friends and physicians, he increased his food to twelve or fourteen ounces per diem, but soon perceived the ill effects upon his health and temper, which were at once removed by recurring to his spare diet. Writing at this period, he reprobates the opinion that old age is little better than death, and shows how actively he passes the day in the pursuit of the arts, and in labouring to inform his fellow-citizens upon various points relating to their interests. He congratulates himself upon the serenity of mind he had arrived at, which elevated him above all grovelling contemplations. His cheerfulness was constant: "then how gay, pleasant, and good humoured I am," he writes: and again, "at my present age of eighty-three, I have been able to write a very entertaining comedy, abounding with innocent mirth and pleasant jests." The late Mr. Abernethy was a great admirer of Cornaro, and, we believe, reprinted his little work. Dr. Miller of New York observes that an exemption from pestilential diseases by reason of abstemiousness becomes sometimes national. Thus the French and Spaniards in the West Indies and other warm climates are observed, by their abstemiousness from spirituous liquors and their retention of a spare diet, to escape dangers to which the British, more plethoric in their habits of body and less careful in their mode of living, have frequently fallen victims in great numbers.

In persons rescued from impending starvation, the greatest care is required in administering food. Many lives, which might have been saved, have been lost by rashness in this respect. All solid food must at first be avoided, and especially milk, which, solidifying in the stomach, is of difficult and slow digestion. A little thickened broth only should be given every few hours. Mr. Hunter found by experiment that animals enfeebled by abstinence maintain their temperature with difficulty, and thus the cautious application of heat and gentle friction should not be neglected.

Village Reading-Rooms.—In a little volume entitled 'The Forester's Offering,' by Mr. Spencer Hall, the first part is devoted to legendary tales of "merrie Sherwood," and of Robin Hood and his followers; and, after glancing at the past, the author turns to the modern history of the forest, and notices, among other contrasts which it now presents, the libraries and mechanics' institutes in the towns and villages within its boundary. He tells us "of woodmen and agricultural labourers, after the wonted toils of the day are concluded, plodding six miles through the depths of the forest to the rural village of Edwinstowe, not to spend the night and their scanty earnings in quarrelling and drunkenness, as was once the fashion amongst this class, but to obtain useful information, and, after improving and humanizing each other by assembling together, to carry the results into the bosoms of their families." The history of one of these institutions, "founded on the very spot where our ancient kings signed the cross, for lack of skill to write their names" (Edwinstowe), will not be without interest to the general reader. The first attempt to form a library, in 1836, failed, and the subject remained in abeyance for a whole year. "At the close of the summer of 1837," says Mr. C. Thomson, a correspondent of the author, residing in the village, "it struck me that if a few persons would unite, and begin the new year by paying one penny per week, taking periodicals to the amount subscribed, they would form the nucleus of a library. I got twenty names the first week, and we started the first Tuesday in January, 1838, and have now fifty members. We have had three readings, or lectures, and we purpose forming a music class on our next meeting, and to resume our readings and lectures. We have an annual meeting on New Year's Eve, when a report of the year's proceedings is read, addresses are delivered, and we have also a tea-party, open to all persons of character, whether members or not, on payment of ninepence, the surplus money going to the book-fund. The periodicals taken are,—'Chambers's Journal,' 'Athenæum,' 'Farmers' Magazine,' 'Loudon's Gardeners' Magazine,' Mechanics' Magazine,' Architectural Magazine,' 'Polytechnic Journal,' 'Penny Magazine,' 'Tait's Magazine,' 'Visitor,' Knight's 'Pictorial Shakspere,' 'Pictorial History of England,' and, in addition to these, the works of Cooper and Scott, biography, travels, elementary works on science, &c. We admit females as members, and likewise to the lectures; and the institution comprises men of all trades in the neighbourhood, as well as farmers and agricultural labourers, many of whom reside at distances varying from two to six miles from the village. We have never applied for honorary members or donations, nor have any hitherto volunteered. Our rules are such as those which usually govern mechanics' libraries, with, however, this difference, that apprentices are permitted to read or take out books, simply on condition of their masters or parents being answerable for their punctual return uninjured, and, to conciliate all parties, we except works on religious controversy and politics. An anxiety prevails amongst the members to build, by shares, a library and museum, with two dwelling-houses beneath, to pay (with what may be gained by occasionally letting the large room for public purposes) the interest for the money invested; and I think this will be ultimately accomplished. Formerly no place was more constantly or conspicuously figuring in the local police report than this; but now it is just the reverse, and its name is seldom seen there."



[The Host and the Cook.]

CHAUCER'S PORTRAIT GALLERY.

THE HOST.

"The two names which perhaps do the greatest honour to the annals of English literature are those of Chaucer and Shakspere. After the dramas of Shakspere, there is no production of man that displays more various and vigorous talent than the Canterbury Tales.' Splendour of narrative, richness of fancy, pathetic simplicity of incident and feeling, a powerful style in delineating character and manners, and an animated vein of comic humour, each takes its turn in this wonderful performance, and each in turn appears to be that in which the author was most qualified to succeed." Thus writes Godwin, in the preface to his Life of the poet, reviewing generally the characteristics of the great father of English poetry; but elsewhere, noticing that particular quality which more than any other stamps Chaucer's productions, he calls him emphatically "*the poet of character and manners*:" it is in that light we here propose to view him.

To many, perhaps to a majority of our readers, the 'Canterbury Tales' are comparatively unknown; a circumstance that, considering their extraordinary merit, and their peculiar fitness for popular appreciation and enjoyment, is much to be lamented, and is only to be accounted for by the generally prevailing notion of the difficulty of understanding the language in which they are written. Were this difficulty as great as is commonly assumed, there would be what we may term great poetical injustice in doing so little for Chaucer who has done almost everything for us; who not only created for us a national poetry, but restored to us a national tongue. But the difficulty is less than it seems, and may be almost entirely got rid of, without any innovation on the poet's own words or modes of pronunciation. A glossary at the foot of each page to explain any difficult words, modern spelling where practicable, and a careful accentuation of the words in each line, which, in accordance with the principles that guided Chaucer in its composition, require to be differently pronounced than at present,* will enable any reader of ordinary intelligence to enjoy this fine old poet in his own admirable dress. A word or two on the great error which has so long existed with regard to Chaucer's versification will not be out of place. Dryden, for instance, says, "It were an easy matter to produce some thousands of his verses, which are lame for want of half a foot and sometimes a whole one, and which no pronunciation can make otherwise." The first part of this statement was evidently founded on entire ignorance or want of consideration of the state of the language when Chaucer wrote. For centuries the French tongue only was used in the court and among the higher classes of society; Chaucer, with a noble ambition, determined to write an English poem in English words, but of course would find it impossible to eradicate all traces of the French, supposing him to have wished to do so. His poems, therefore, abound with Gallicisms, and a great number of his words require to be pronounced in accordance with the laws of the French rather than the English tongue. It must also be acknowledged that he did what doubtless every other great poet under his circumstances would have done too, chose whichever pronunciation—the French or the English, both as yet in a very unsettled state—suited him best at the moment. Had Dryden attended to this, he would have found his great predecessor's versification generally flowing and musical, often singularly so. With regard

* These improvements are carried into effect in Mr. Cowden Clarke's 'Riches of Chaucer.'

to the last part of his statement, Dryden must be held blameless, except for want of faith:—he saw many exquisite lines, and should therefore have had more confidence in their author than to suppose him capable of writing lines which "no pronunciation could make otherwise" than defective:—for the truth is that the early editions of Chaucer were grievously corrupt; and in the very passage cited by Dryden to illustrate Chaucer's defects, the lines that then appeared to justify the more serious part of his complaint are now known to be wrong. Thus Dryden read—

"For this ye knowen as well as I;"

which should be

"For this ye knowen *al* so well as I," &c.

The plot of the 'Canterbury Tales' may be briefly described. A troop of pilgrims to the shrine of Thomas à Becket at Canterbury, twenty-nine in number, are met at the Tabard, now the Talbot Inn, Southwark, the evening preceding the day on which they intend to commence their journey. These pilgrims are so admirably selected from the different classes of society, that we see in the development of their characters "all the various manners and humours," as we now call them," says Dryden, speaking of his own time, "of the whole English nation. Not a single character has escaped him." The "prologue" to the work describes all these personages, after which the *Host*, the subject of our present paper, is introduced as follows:—

"A seemly man our hosté was with all
For to have been a marshall in a hall;
A largé man he was with eyen steep,
A fairer burgess is there none in Cheap:
Bold of his speech, and wise, and well ytaught,
And of manhood him lackéd righté nought:
Eke thereto was he right a merry man."

Our readers are now acquainted with no less important a personage than the contriver of the principal portion of the plot or fable of the 'Canterbury Tales,' the chief agent in the conduct and management of the whole. "Great cheer" has "our host" made for the pilgrims, giving them strong wine, and "victual of the best;" but during the supper, at which, in accordance with the custom of the good old times, he presided, he has thought of something still better, which he takes the first opportunity to communicate. Accordingly, after supper, he thus addresses the pilgrims:—

"Now Lordings, truély
Ye be to me welcóme right heartily,
For by my truth, if that I shall not lie,
I saw not this year such a company
At once in this herberwe* as is now.
Fain would I do you mirth, and I wist how;
And of a mirth I am right now bethought
To do you ease, and it shall cost you nought.
Ye go to Canterbury; God you speed,
The blissful martyr quité† you your meed;
And well I wot as ye go by the way,
Ye shapen you to talken and to play;
For truély comfórt ne mirth is none
To riden by the way dumb as the stone;
And therefore would I maken you dispórt,
As I said erst, and do you some comfórt.
And if you liketh all by one assent,
Now for to standen at my judgément,
And for to worken as I shall you say
To-morrow, when ye riden on the way;
Now by my father's soulé that is dead,
But ye be merry, smiteth‡ off my head:
Hold up your hands withouten moré speech."

* Herberwe,—arbour, inn.
† Quite for requite.
‡ Smiteth for smite.

The answer of the pilgrims may be easily guessed; the frank hearty good-nature—the gay jovial spirit of the appeal was cordially responded to; in a spirit of the truest wisdom, Chaucer, who makes himself one of the party, says—

"Us thought it was not worth to make it wise,"

so they "bad him say his verdict as him lest:"*—

"Lordings, quod he, now hearkeneth for the best;
But take it not, I pray you, in disdain:
This is the point, to speak it plat and plain,
That each of you, to shorten with your way,
In this viágе† shall tellen talés tway;
To Canterbury ward, I mean it so,
And homeward he shall tellen other two,
Of aventures that whilom have befall.
And which of you that beareth him best of all,
That is to say, that telleth in this case
Talés of best senténce and most solace,
Shall have a supper at your aller cost,
Here in this place, sitting by this post,
When that ye come again from Canterbury."

We cannot but here observe, by the way, how this last line but one carries the eye and the thought back to the domestic architecture of the middle ages, when the large rooms or halls of inns, and of gentlemen's mansions of a secondary and inferior class, were supported sometimes by a pillar or "post" in the centre, sometimes by one near each end of the room. Near the post appears to have been the head of the table, the place of honour; for the Host says the victor in the proposed intellectual games shall sit "here in this place, sitting by the post;" and it is a characteristic evidence of the dignity and social rank of "hosts" in those days to find Henry Bailly, our host, even in the presence of a knight of distinguished reputation, who forms one of the party, taking that seat as a matter of course. The proposal is now told, but the host naturally wishes himself to enjoy the mirth it provides, and therefore adds—

"— for to maken you the moré merry,
I will myselven gladly with you ride
Right at mine owen cost, and be your guide;
And who that will my judgément withsay,
Shall pay for all we spenden by the way."

Both propositions are accepted by the pilgrims with "full glad heart, and they prayden him also"

"— that he wouldé be our governor,
And of our Talés judge and réporter,
And set a supper at a certain price,
And we would ruled be at his devise
In high and low."

In the morning the pilgrims ride forth, and then the Host, reminding them of their engagement, at once assumes the duties of his situation:—

"Let see who now shall tellé the first tale:
As ever may I drinken wine and ale,
Who so is rebel to my judgément
Shall pay for all that by the way is spent.
Now draweth cut or that ye further twinne,‡
He which that hath the shortest shall begin."

The "cut" or lot falls on the knight, not without a sort of suspicion against our politic host of a little manœuvring, to ensure a priority desirable on account of the rank of the party, and to compass also what perhaps the host thought of more importance—a favourable commencement of his scheme. The knight begins with that noble tale so well known by Dryden's version, of Palamon and Arcite. Such is the plan, and such the mode of commencement of the 'Canterbury Tales.'

* Lest,—liked, pleased.
† Viage,—journey.
‡ Twinne,—go.

With wonderful strength and consistency, the character of the Host is kept up throughout the work. His undissembled delight at the close of the knight's tale—

"Our hosté laugh'd and swore, So mote I gon,
This go'th aright, unbuck'led is the mail:
Let see now who shall tell another tale;"

his professional considerateness, when, having named the Monk as the next spokesman, the drunken Miller interposes, and insists upon first telling his tale, the host kindly says—

"Abidé, Robin, my levé* brother,
Some better man shall tell us first another:
Abidé, and let us werken thriftily;"

but finding him deaf to reason, bids him hastily "tell on a devil way;" his dislike to the Reve's "sermoning," as he characterizes the latter's moral reflections on his own past life; his humour when he reminds the Cook of the many a Jack of Dover (probably a species of pasty) he has sold

"That hath been twies hot and twies cold;"

his scorn of the Franklin's desire that his son should learn gentillesse—

"Straw for your gentillessé, quod our host;"

his indignation at injustice, and his sympathy with its objects, as marked by his observations on the Doctor's tale (the popular story of Virginius); his ludicrous contempt for the Pardoner, who made a business of the exhibition of relics; and, lastly, his peculiarly tender and gallant manners towards the fair, as shown when he addresses the Prioress

"As curteously as it had been a maid;"

all combine to form a picture of as true and genuine a specimen of a good old English man as it would be possible to find in the entire range of literature. Our space will only allow us to notice one or two other interesting matters connected with the Host. The first concerns a piece of his domestic history which is furnished to us, and from which we find that his lady was somewhat of a shrew. He tells us a few particulars of her at the conclusion of the Merchant's tale, in which a lady plays a not very creditable part, but wisely remembering the possibility that what he was saying

"Should reported be
And told to her of some of this company;"

he desists for the present; but when the subject is again brought home to him, by the contrast presented by the character of Prudence in the tale of Melibœus, he cannot help exclaiming .

"As I am a faithful man,
And by the precious corpus Madrian,
I haddé lever than a barrell of ale
That goodé lefe my wife had heard this tale."

And then follow some evidences of his spouse's disposition, which do not place her gentleness, &c. in a very favourable light. "But," as he adds, "let us pass away from this matter." An interesting illustration of the times in connection with religious matters arises from the Host's propensity to swearing.

"Benedicite, exclaims the parson;
What aileth the man so sinfully for to swear:
Our hosté answer'd, O! Jankin, be ye there?
Now good men, quod our host, heark'neth to me,
I smell a Lollard in the wind, quod he.
This Lollard here will prechen us somewhat."

So that to abstain from ribaldry and profane oaths in the time of Wickliffe, were proofs of heresy; as they were afterwards, in the reigns of Charles I. and II., of disloyalty!

* Levé,—dear

We have only now to remark that Chaucer has put into the mouth of the Host—evidently a favourite character of his—a portrait of himself. At the conclusion of the Prioress's tale, the Host's eyes fall upon the poet:—

"What man art thou? quod he.
Thou lookest as thou wouldest find a hare,
For ever upon the ground I see thee stare.
Approaché near, and look up merrily.
Now ware you, sirs, and let this man have place.
He in the waist is shapen as well as I:
This were a poppet in an armé to embrace
For any woman small and fair of face.
He seemeth elvish by his countenance,
For unto no wight doth he dalliance."

The Cook must form the subject of another paper.

The Polyps.—'Sepia octopodia' (the polyp of the ancients) is common in the Mediterranean. This dangerous species is furnished with eight tentacles, which are generally, on the coast of Greece, not more than twelve to eighteen inches long, because the animals are taken before they attain any age; some, however, are an ell in length. These tentacles have a tendinous consistence. The largest in the Mediterranean are near Naples, but the East Indian, and those in the bay of Mexico, attain an enormous size. One of these polyps is sufficient to hold a man firmly, and this accident sometimes occurs to bathers. They move themselves in the water uncommonly fast, grasp whatever living thing comes in their way, and adhere firmly to it by means of suckers on their tentacles, which form a vacuum and cause severe pain. In the middle of the circle from which the tentacles proceed, is a hard black beak, like that of the parrot, which protects the mouth and can be extended beyond its investing membranes; it is principally used in preparing sea-crabs for digestion. The body of the animal is like an oval bladder. They are brought from the water, on the coast of Greece, principally by means of spearing; they are then laid on a stone, that all the mucus may run off. To prepare them, when fresh, for eating, they are generally spitted with their long tentacles bound together, and roasted over coals, or steamed and eaten with lemon juice. They taste like crabs, but are not easy of digestion. They may be dried, and, in that state, are brought to market. The Grecians prize these polyps very much; and, among the Romans, they were considered a luxury; we therefore often see them pictured on the walls of their dining-rooms.—*Extract from Fiedler's Reise durch Griechenland, in the Foreign Quarterly Review.*

Fossil Rain.—Singular as may appear the notion that the impressions of rain should be recognisable and be recognised on the surfaces of stratified rocks, the opinion is held by some eminent geologists, on the evidence of specimens of new red-sandstone taken from the Storeton quarries near Liverpool. In March, 1839, Mr. Cunningham, to whose researches in the Storeton quarries we are indebted for much of our knowledge of the foot-prints of Chëirotheria and other antient animals, communicated a paper on the subject to the Geological Society of London. "In examining some of the slabs of stone extracted at the depth of above 30 feet, Mr. Cunningham observed that their under surface was thickly covered with minute hemisperical projections, or casts in relief, of circular pits in the immediately adjacent layers of clay. The origin of these marks, he is of opinion, must be ascribed to showers of rain, which fall upon an argillaceous beach exposed by the retiring tide, and their preservation to the filling up of the indentations by sand. On the same slabs are impressions of the feet of small reptiles, which appear to have passed over the clay previously to the shower, since the foot-marks are also indented with circular pits, but to a less degree, and the difference Mr. Cunningham explains by the pressure of the animal having rendered there portions less easily acted upon." If these impressions on the clay be really the marks of rain or hail (a specimen is before us, and it certainly resembles such impressions on clay), perhaps the easiest way of comprehending the preservation of them is to suppose dry sand drifted by the wind to have swept over and filled up the foot prints, rain-pits, and hollows of every kind which the soft argillaceous surface had received.—*Penny Cyclopædia.*



[The Market-Cart.—Gainsborough.]

GRATUITOUS EXHIBITIONS OF PICTURES.

THE NATIONAL GALLERY.

SIR JOSHUA REYNOLDS, whose acute judgment as a critic was equal to, though it could not surpass, his profound knowledge of and consummate skill in the practice of painting, has said, in his fourteenth Academical Discourse, of the painter from whose beautiful composition the above wood-engraving is taken—"If ever this nation should produce genius sufficient to acquire us the honourable distinction of an English school, the name of Gainsborough will be transmitted to posterity in the history of the art, among the very first of that rising name." A tribute of applause so unqualified from a contemporary with whom the subject of his eulogy had lived for a considerable period on terms of rivalry, is no less honourable to the good feeling and sagacity of its author, than it is remarkable for its innate modesty, since at the very time he delivered his sentiments he had himself become the founder of that school, the existence of which he contemplated as a then future contingency In quoting the opinion of Sir Joshua Reynolds, we have no wish to guide the judgment of the spectator by the authority of a bygone dictum, but cite his observation simply to show that Gainsborough was held in high estimation by one in every respect, both theoretically and practically, competent to arrive at a sound conclusion.

Before speaking of the Market-Cart itself, and of the style adopted by its painter, it will add interest to this paper to give a short notice of his life. Thomas Gainsborough, the son of a clothier, was born at Sudbury in Suffolk, in the year 1727, and evincing a strong natural talent for drawing, particularly in sketching all the picturesque scenery of his native county, was at fourteen years of age placed under the tuition of Francis Hayman, with whom he remained four years. After practising as a portrait painter at Ipswich and at Bath, he came to London in 1774, and obtained extensive employment in that capacity, and soon attained high reputation in landscape composition. Shortly before his death he was reconciled to Sir Joshua Reynolds, between whom and himself a coolness had for some time existed, and that eminent painter was with him in his last moments. Gainsborough had just said, "We are all going to Heaven, and Vandyke is of the company," when he suddenly expired. He died of cancer in the neck, on the 2nd of August, 1788.

The Market-Cart is as excellent a specimen as we could cite in illustration of the scrupulous fidelity with

which Gainsborough planned his works, and the entire consistency of management he displayed throughout. The scene here intended is evidently the entrance to a wooded road, from which the spectator may be supposed to view the picture. The figures and the horse drawing the cart approach, and are at the moment chosen by the artist passing a break or opening amongst the trees, through which the pure morning sun-light streams across the whole, illuminating in its progress the various objects which form the centre of the composition. There are two exquisitely natural country-girls in the cart, which is loaded with various samples of market produce. The figures present the perfection of rustic beauty—they are plain, simple, and unaffected. Over the front of the cart, above the haunches of the horse, a shadow is thrown which has the double effect of making the vehicle appear to recede, whilst it adds to the excellent appearance of foreshortening of the horse. The consistency so apparent arises from the careful manner in which all parts of the picture are made to receive light from one source. The touches of half-tint on the dark tree on the right,—the brilliant dash of red on the figure stooping down to pick up some sticks,—the beautiful illumination of the white cloud above, and the pure tone of light upon the sleepy dog which trudges by the side of the horse, all combine to satisfy the judgment in as great a degree as they fascinate the eye. It should be noted in this picture, that although there are all the varieties of tint which the glow of morning can present, from the sunlight of the foreground to the grey cool hue of the distance, there is but one touch of pure, that is, positive colour in the whole composition, the piece of red before alluded to. It is the introduction of this which so powerfully conduces to the exactness of gradation we observe in the work, for it immediately carries the eye to the source whence the light is derived, in the same manner as the brightness of the tints on the figures, horse, and dog, rivet the attention on that which the painter intended as the chief attraction of his picture.

Homely English landscape was that in which Gainsborough chiefly delighted, and no artist has been more successful in its delineation. The rich foliage in some, and the variation of hill and dale in others,—the serenity of woodland scenery, and the simplicity of rustic employment, appear in his pictures as purely natural as they are entirely national. Other painters have invested our landscape views with a portion of their own poetic imagination, but Gainsborough was content to take nature as he found her, only exercising his great natural sagacity in the fitting choice of his subject, and transferring to canvas the result of his observation, a process he has performed, as in the Market-Cart, with masterly skill. Simplicity and nature are, therefore, the qualities to be sought for in the works of this artist, and not loftiness of conception or majesty of design.

In viewing a landscape by Gainsborough it will not fail to occur to the spectator that there is in the management of the lights and darks a resemblance to works of the same class by some of the Dutch and Flemish painters, yet in all other respects our countryman differs from them. He is in no degree an imitator, nor is he a plagiarist. He formed his own style, though he shows that he was guided in this respect by the same principles as had rendered their names famous. This point of resemblance is chiefly observable in the practice of making the dark masses predominate over the light, which inevitably has the effect of guiding the eye at once to the chief point of the picture. The nice gradations of tint in the several distances prevent the contrasts between the lightest and the darkest parts of the composition from becoming violent. They by no means militate against a powerful effect, but conduce to a harmonious whole. We are now speaking of such works of Gainsborough as that under notice, for there are others, consisting principally of a rustic figure or group, in which the landscape is made subservient to the principal object; in these the balance of light will be usually found to exceed the dark.

The mode of execution is another point to which the reader's attention may be profitably drawn. Provided that the effect which his judgment satisfied him was correct were obtained, Gainsborough was indifferent to the means by which it was produced. Hence we see, upon a near inspection of most of his works, an extraordinary collection of scrapes and scratches, of the value of which it is difficult to believe, particularly when it occurs amongst the foliage; yet, upon receding to a proper distance, that is, so far as that the eye will conveniently embrace the whole surface of the canvas, we cannot help being struck with the exact similitude presented to the appearance of nature. It is manifest from this that one important rule to follow in viewing his works is this, that the spectator should retire to the distance indicated above, before he forms his judgment of their merit.

We are quite aware that it may be objected that the leafing of trees never forms itself in this manner, and the observation is undoubtedly just. Yet as painting is intended to imitate the effects produced by nature, it matters not whether it be gained by a bold or dashing touch, by a multiplicity of dots or scratches, by a load of colour on the surface of the canvas, or a thin tint through which the canvas is apparent. By each and every of these modes an appearance of truth in landscape has been attained, and by whichever of them, or by any other means, he can succeed in his object, an artist is justified in resorting to it for his purpose. Though every leaf upon a tree has light, and middle-tint, and shade, yet when viewed at a distance those various degrees are harmoniously blended, and present masses of forms in which light, and middle-tint, and shade are also apparent. It is this harmony, this blending, this massing, which the landscape-painter endeavours to present to view, and not the minute particles which combine to form it. If, then, his picture, beheld at such a distance as that the eye of the spectator can at one view compass its whole surface, yield a true idea or notion of a landscape, the space of which could also be embraced at a single glance, he has succeeded in his effort at imitation, in an artistic sense, as much as if he had painted every leaf upon each tree and the light upon every blade of grass within the limit of his subject.

It is a truly gratifying addition to make, when speaking of the professional celebrity of Gainsborough, that he was as estimable in his private character as he was eminent in his vocation. As on one point we commenced by quoting the words of Sir Joshua Reynolds so on the other we can do no better than cite his valuable opinion. When speaking, in a lecture delivered at the Royal Academy soon after the death of Gainsborough, and referring to that artist, the accomplished President says, "While we lament him as an artist, let us not pass over those virtues that were an honour to human nature; that generous heart, whose strongest propensities were to relieve the genuine claims of poverty. If he selected, for the exercise of his pencil, an infant from the cottage, the tenants of the humble roof generally participated the benevolence of the painter." Here we may observe the natural proneness of a good man duly to estimate the moral worth of another, for Reynolds was himself as eminent for his charity as he was exalted in the practice of his art.

THOMAS BRITTON, THE MUSICAL SMALL-COAL MAN.

Perhaps no biographies are more generally interesting than those which illustrate the power of superior minds to rise above the uncongenial condition to which they were born; for no feeling is more universal than that which such biographies most strongly appeal to—the desire of improving our position in life. However little similitude there may be between our own minds and circumstances and those of the individual with whose fortunes we are for the moment occupied, we still feel an almost personal sympathy with his struggles, we experience an almost personal satisfaction when they at last terminate in complete success. Difficulties of this nature must have strongly beset the early course of Thomas Britton, the subject of our present paper, but unfortunately the details have not been recorded. Another source of interest, however, is opened in his biography—one, too, infinitely more elevating. His was no vulgar ambition. His calling was very humble, but it made him independent, and had advantages which he knew how to use and appreciate; accordingly, when he had obtained his books, his music, and the distinguished society which his tastes, habit, and intellect required, he kept to that calling still; none of the fretfulness which a less steady mind would have exhibited at the discrepancy between his morning and evening occupations—going his daily rounds with the coal-sack on his back in the one, and receiving and entertaining a brilliant company at his own house at Clerkenwell in the other,—troubled him. The popular greeting with which he was often saluted in the streets, "There goes the small-coal man, who is a lover of learning, a performer in music, and a companion for a gentleman," remained altogether true to the latest day of his life. Britton's modesty would have disclaimed the epithet of 'the philosopher,' but surely this was philosophy!

He was born at or near Higham Ferrers in the county of Northampton, about the middle of the seventeenth century. From this place he removed to London whilst a boy, and there apprenticed himself to a dealer in small-coal. At the expiration of his apprenticeship, Hearne the antiquary says, he received a sum of money from his master to go and set up in his native place, or, in other words, that he might not carry on the same business in London. He went to Higham Ferrers, but the money was spent without any useful result; so he determined to return to the metropolis, and commence business there. His character does not make this statement very probable, and in the absence of conclusive testimony we may be allowed to disbelieve it. One of his first acquaintances in London was an eminent chemist, Dr. Garaniere, who, seeing the interest Britton took in his studies, admitted him to his laboratory. Here he improved his opportunities so well, that he constructed a 'moving laboratory' for himself, upon so ingenious a plan, that a Welsh gentleman who saw it took him down to his house in Wales, in order that he might there construct a similar instrument. Britton gave perfect satisfaction, and received in return a very handsome gratuity. He now became a diligent collector of all sorts of curiosities, more particularly in old books, manuscripts, music, drawings, prints, &c. His favourite literary subjects were chemistry, judicial astrology, magic, and mystic divinity; on these and on music he was perpetually on the watch, as he pursued his daily rounds, to acquire the scarcest, most ancient, and most valuable works. Every book-stall that lay in his way was searchingly examined. Some years before his death he sold a collection of old books and manuscripts, the very catalogue of which, Hearne says he looked at with no small surprise and wonder. A very interesting evidence of the taste, skill, and knowledge he lavished upon this matter is afforded by one of the anecdotes of Britton. About the commencement of the last century there was a fashion among persons of rank of buying up scarce old books and manuscripts, which taste, then first spread amongst the upper classes, has been the foundation of many rich collections, some of which are now national property. The Duke of Devonshire and the Earls of Oxford, Pembroke, Sunderland, and Winchelsea in particular, were accustomed to ramble through London for this purpose on the Saturday mornings, when the houses of parliament did not generally meet. After their walk the party met in Paternoster Row, at the corner of Ave Maria Lane, at the house of a bookseller of the name of Bateman. Here, precisely at twelve o'clock, Britton, who most probably was employed to assist them in their researches, was accustomed to come in his blue frock, and laying down his coal-sack by the door, to join the titled personages within, and chat with them for an hour or so upon the subjects of their search.

But the most important feature of his life is his connection with music, which Sir John Hawkins thought of so much importance, that he devotes many pages of his 'History' of that art to an account of Britton's life. Sir John, indeed, considers that Britton's musical meetings or concerts were the first things of the kind in England, but that is denied in Chalmers's 'Biographical Dictionary;' the historian also adds that he was the undoubted parent of some of the most celebrated concerts of his (Sir John's) day; a statement he must have made on his personal knowledge, and therefore to be relied on. Britton's meetings began in 1678, and among his earliest supporters was Sir Roger L'Estrange. The place chosen was Britton's own house in Aylesbury Street, Clerkenwell. Here his visitors found on the ground-floor a coal-shed, and a very narrow and almost perpendicular staircase or ladder leading to a long low room above. This was the concert-room. Here Dr. Pepusch *and sometimes Handel* played the harpsichord: Woolaston the painter, who was a good performer on the flute and violin; Hughes the poet; Dubourg, who played here the first solo he ever played in public, and numerous distinguished public performers were among the other members. The reputation of the meetings spread, till the most distinguished ladies of the court condescended to visit the small-coal man's house, and enjoy his excellent entertainments. "A lady of the first rank in this kingdom, now living," says Sir John Hawkins, referring to the Duchess of Queensberry, "one of the most celebrated beauties of her time, may yet remember that in the pleasure which she manifested at hearing Mr. Britton's concert she seemed to have forgot the difficulty with which she ascended the steps that led to it." At first the meetings were absolutely gratuitous, but perhaps many of the parties who shared in them felt that it was wrong to let the whole expense fall on their host; ultimately the subscription was fixed at 10*s.* a year, Britton finding the instruments; and coffee was provided at a penny a dish. It is very probable, after all, that this arrangement was consequent on Britton's renting a more convenient room for the purpose, and which he obtained in the adjoining house.

Considering all this in contrast with Britton's business occupation, we can hardly wonder at the many strange notions which got abroad concerning him. "Some," says Walpole, "thought his musical assembly only a cover for seditious meetings; others, for magical purposes. He was taken for an atheist, a Presbyterian, a Jesuit." But ultimately it seems to have been wisely concluded, "that Britton was a plain, simple, honest person, who only meant to amuse himself." The circumstances attending Britton's death are as strange

and romantic as they are painful. One Honeyman, a ventriloquist, was introduced into his company by a Justice Robe, who played at the concerts; this man, making his voice appear to come from a distance, announced to Britton his approaching dissolution, and bade him prepare himself by repeating the Lord's Prayer on his knees. The poor man did so, and such an effect had the affair altogether on his imagination, that he died in a few days, a victim to the miserable heartlessness which so commonly characterises the practical joker. Britton's death occurred in September, 1714, when he was upwards of sixty years of age. He was buried on the 1st of October following, in Clerkenwell church-yard, and his corpse was followed to the grave by a great concourse of people. His books, manuscripts, music, and musical instruments were sold for the benefit of his widow—the instruments alone produced 80*l.* Many articles were purchased at the sale by Sir Hans Sloane. In person he was short and thick-set, with an exceedingly honest, open, ingenuous countenance. Woolaston painted two portraits of him, one under circumstances worthy of notice, on account of the instructive modesty they show Britton to have possessed. Having emptied his sack earlier than usual one morning, he felt inclined to call on his friend the painter above named. But the difference between the musician and the coal-man was for others to forget, not him, so that all that he could do was, he thought, to raise his well-known musical cry near Woolaston's house. He did so, and Woolaston, to whom the cry was strange in that neighbourhood, hearing it, immediately threw up the sash of the window in the room where he was sitting, and called Britton in. It was then that he painted one of the best known of the many portraits that used to be commonly seen in the print-shops,—Britton with his blue frock, and the small-coal measure in his hand. Beneath these portraits were generally inscribed the following lines by Hughes the poet, who, as we have already mentioned, was a member of the concerts; and with these we conclude our account of the celebrated small-coal man:—

"Though mean thy rank, yet in thy humble cell
Did gentle peace, and arts, unpurchased, dwell.
Well pleased, Apollo thither led his train,
And music warbled in her sweetest strain.
Cyllenius so, as fables tell, and Jove,
Came willing guests to poor Philemon's grove.
Let useless pomp behold, and blush to find
So low a station,—such a liberal mind."

MUD-TURTLES, AND THE MANNER OF HUNTING THEM.

[From a Correspondent.]

One of the greatest drawbacks upon a residence in our American colonies, to those who have been accustomed to enjoy the out-door amusements and recreations to be met with in most parts of Great Britain, is the almost entire absence of the means of similar enjoyments. I have often thought of this when I have caught myself practising some unsportsmanlike species of fishing, such as that of capturing bull-frogs, cat-fish, or suckers; or when I have taken out my gun in pursuit of game that I should have been ashamed of pursuing in my own country. To be sure, it takes some time to overcome one's imported prejudices; but after awhile the mind, in a great measure, becomes reconciled to that which cannot be remedied. Among the summer amusements, if amusements they may be called, is that of hunting the mud-turtles. There are several varieties of the tortoise common to this part of North America, and no fewer than three or four, of different shapes and sizes, that frequent the ponds and the rivers, two distinct species among which are universally denominated mud-turtles, owing to their generally being found where the water is tolerably still, whether in pond or river, and where the bottom for the most part is muddy, amongst which mud they find the principal part of their food. One, however, is of a very small kind, only from four to six inches long, and is therefore but seldom hunted; whereas the larger species sometimes measures as much as fifteen or sixteen inches in length, or even still more, and its body is bulky and heavy in proportion; for I have met with some of them that weighed between thirty and forty pounds. Some persons dress them and eat them after the manner of the green turtle of the West Indies, and pronounce the meat delicious; but they are by no means a favourite dish among any class of the inhabitants; so little so, indeed, that not one-fourth part of those that are caught are used as food by the human species; nor do I remember any animal, either wild or domestic, that appeared to enjoy a feast of mud-turtle. The fact is, though the flesh is very rich, it has a muddy and unpleasant flavour, at least so say the great majority of the persons I have ever known to taste it. This is also the case as regards the small land-tortoise, or terraphin, found in various parts of the United States, which some of the city epicures profess to consider a great delicacy, but which the generality of the people do not consider fit to be dressed and brought to table. The species of mud-turtle already spoken of may be seen in great numbers about the margins of the North American lakes and rivers; and although they may probably be found in greater numbers in the solitudes of the forests, wherever there are shallow lakes with muddy buttoms, they also frequent the great fresh-water lakes, such as Erie and Ontario, and the larger rivers therewith connected; nor do they disappear from their original haunts when the country becomes peopled, which, considering that they are shy animals, seems a thing likely enough to occur; for in the oldest settlements in the Canadas, the inhabitants believe them to be as numerous at the present time as they were fifty or sixty years ago. Wherever there are prostrate trees, stretching from the shore to a considerable distance into some river or lake, they appear to be the favourite resorts of the mud-turtles when they quit their watery element, for many a time have I seen six or eight (of various sizes) upon a single tree; but if no such trees are at hand, but pieces of rock or the tops of large stones should show themselves above the surface, then these creatures crawl upon the stones, where they will bask in the sunshine and sleep for several hours when the day is warm and sunny. But they are easily aroused; for unless silence and considerable caution are observed, while those in pursuit of them are still at a considerable distance, either their sight or their hearing is so acute, that they detect the approach of an intruder, and instantly plunge headlong into the water. Along the northern shore of Lake Erie, and at the distance of about twenty miles from the outlet of that lake, or the head of the Niagara river, a small settlement was commenced in the early part of the present century, where a sluggish stream of water falls into the lake. Since in all new settlements a grist-mill is a necessary establishment, an individual more enterprising than the rest put up a wooden building for this purpose near the mouth of the small creek; but in order to establish the necessary head of water that was to put the machinery in motion, he had to throw a dam across the stream. Though it was not necessary to raise the water within the dam more than nine or ten feet, in accomplishing this he found that he laid under water above sixty acres of the adjoining lands, a result he had not calculated upon, either not understanding the art of levelling, or not conceiving the fall in the waters

of the creek so trifling as they evidently proved to have been. The consequence was, that at the expense of losing about sixty acres of land, of no very great value in that part of the country, he gained such an extensive body of water, that his mill had a supply when many others were often left dry. Wherever the water is made to overflow the land in this way, all the timber dies within a year or two, which of course proved the case with the trees that stood in this spacious reservoir. In the course of a few years the trees began to decay; and from that period a strong gale never passed over the adjoining lake without prostrating some of these old monarchs of the forest. Previous to the commencement of this settlement, a small bay at the mouth of the creek, full of large stones that showed themselves above the waters of the lake, had long been noted as abounding with mud-turtle; and by the time half of the trees in the mill-dam had been prostrated, so numerous had the mud-turtles become in this newly-formed pond, that they became the wonder of the whole district.

In the broad but clear waters of the Niagara river, several miles above the Falls, there are two or three large bays, formed by the winding course of this noble stream, where the current becomes comparatively slow, so that the mud-turtles appear to meet with little or no difficulty in stemming it; for if the sportsman will take the trouble of concealing himself in the adjoining bank, where he may occasionally meet with bushes or underwood, or lie anchored off in the stream at some distance in a small canoe, that looks more like a floating log of timber than a navigable craft, he will have opportunities of seeing these creatures rowing themselves from one part of the bay to another, for the purpose of finding some suitable stone, or stump, or prostrate tree, upon which to crawl for the purpose of taking a nap for a few hours. Many a time have I, accompanied by a Canadian friend, repaired to some of these bays in the river, particularly during the months of May and June, since at that season, the water of the river still continuing cold from the recent melting of the ice in the lake from which it issues, they leave their favourite element as much as possible, in order to enjoy the more congenial temperature of the atmosphere, which has by that period become pretty warm. We used to reach the place we had fixed upon for a few hours' diversion at an early hour in the morning, one of us ensconcing himself on the river bank, and the other dropping gently down the stream, and anchoring within gun-shot distance from where we expected our game to make their appearance. We never attempted to shoot them with anything but rifle-ball, for the largest common shot would have harmlessly glanced off their shells, except they had been fired down upon from a moderate height, and in nearly a perpendicular direction. If a ball struck one of them and wounded it severely, it most likely would tumble off its perch upon its back; and while it was struggling and attempting to turn itself over, the person in the canoe would paddle up to it and haul it into his little vessel. But if not mortally wounded, and they managed to keep the right side upwards, before the canoe could reach them they would have dived to the bottom, and might be seen—for the water was very clear—paddling along at a great speed to some place of security. When there are several upon the same log, provided those who fire at them can keep themselves hid and perfectly quiet, two or three may often be shot, one after the other, before the remainder of them take the alarm and plunge heavily into the water.

I have known us capture nearly a score in a favourable morning, including all sizes; and, by way of excuse for not being considered wantonly cruel, we took them home with us, and invariably had some of them dressed; but though with a strong desire to do so, we never relished them much. Had we been near a comb-manufactory, the shells of the large ones would have been worth a trifle; but that not being the case, they were utterly valueless. We had another plea for occasionally engaging in the destruction of these creatures, namely, the unfavourable reputation the farmers give them by asserting that they are great destroyers of both ducklings and goslings; and I afterwards lived to prove that at least the former part of the accusation was correct, for I have over and over again had ducklings of my own carried off by mud-turtles within sight of my own dwelling.

The Planetary System.—This beautiful system of sun, planets, and comets can have its origin in no other way than by the purpose and command of an intelligent and powerful Being. He governs all things, not as the sovereign of this world, but as the Lord of the Universe. He is not only God, but Lord or Governor. We know him only by his properties and attributes—by the wise and admirable structure of things around us. We admire Him on account of his perfections—we venerate and worship Him on account of His government.—*Sir Isaac Newton.*

The True Scientific Inquirer into Natural Philosophy.—His mind should always be awake to devotional feeling; and in contemplating the variety and beauty of the external world, and developing its scientific wonders, he will always refer to that Infinite Wisdom through whose beneficence he is permitted to enjoy knowledge. In becoming wiser, he will become better: he will rise at once in the scale of intellectual and moral existence; his increased sagacity will be subservient to a more exalted faith; and, in proportion as the veil becomes thinner through which he sees the causes of things, he will admire more the brightness of the Divine light by which they are rendered perceptible.—*Sir Humphry Davy.*

Agriculture of Modern Greece.—It is, in two words, almost patriarchal. The plough differs in no respect from that described by Hesiod; it has not been improved for three thousand years. The earth is furrowed to the depth of about three inches, and the seed is sown: so far is well. A harrow to cover the grain evenly and carry off the roots and weeds dug up by the plough, rollers, &c. is unknown. My pioneers made the peasants a small model of a harrow; they at once perceived its value and prepared to adopt it, but many complained that they had no cattle, and must still, as before, use the hand-rake. October is the month for sowing; the field is so full of stones that they generally predominate over earth. The rains of winter come on; the plant appears above ground. In June is the harvest; the produce generally tenfold. The corn is cut down with sickles, bound in small sheaves, and carried home upon horses, much being lost on the road among the bushes, &c. It is next thrown on a round and even place which is solid and sometimes plastered; here it is trodden by horses, less frequently oxen, driven in a circle—only in a few places, as Ajio Petro in the Morea, the corn is threshed; then, however, only by very clumsy instruments. The grain, thus trodden out, is purified by sifting; the short broken straw, Achera, is the usual food for horse and cattle. The corn is ground by water-mills; more frequently, however, windmills are employed. The millstones are light, and impart to the flour a quantity of their sand. The addition of water to this flour, without acid, forms a dough, which is left to stand during the night, and baked on the following day. They often make a cake, a couple of inches thick, lay it on the hot part under a fire, and cover it with hot ashes; sometimes it is baked in the same manner between two plates of iron. It is a great pleasure to them to eat this doughy cake as hot as possible. The greater part of the bread is made of barley: white wheaten bread, but always heavy and half baked, is found in the monasteries. The best white bread was formerly obtained in Hydra and at Poros. Rye bread is rarely met with; the people do not like it. Whenever horses get better food than usual on their journeys, it is barley; oats are only very seldom to be procured.—*Extract from Fiedler's Reise durch Griechenland, in the Foreign Quarterly Review.*



THE CID.—No. IV.

"Of the king right well beloved
Was Rodrigo of Bivar;
For his mighty deeds of valor
Through the world renowned far."

What Bucephalus was to Alexander, Babieca was to the Cid—a faithful servant through a long course of difficulty and danger, and a sharer of his perils on many a battle-field. Like the Grecian steed, Babieca fell into the hands of his master when he was but a youth; but had the better fortune not only to survive his lord, rendering him good service even after his death, but to end a life of warfare in peace. The word Babieca signifies noodle, booby—a strange cognomen for a beast which is said to have been "more like a rational being than a brute;" but why he was thus called is explained by the Chronicle, which says that Rodrigo, when a youth, asked his god-father, Don Peyre Pringos, for a colt; and the worthy priest took him out into a paddock where his brood-mares were feeding, in order that he might make his choice; but Rodrigo "suffered the mares and their colts to pass out and took none of them; and last of all came forth a mare with a colt right ugly and scabby, and, said he, 'This colt will I have.' But, said his god-father with wrath, 'Booby (Babieca), a bad choice hast thou made!' 'Nay,' said Rodrigo, 'a right good horse will this be.' And Babieca was he henceforth called, and he was afterwards a good steed and a bold, and on his back did my Cid win many battle-fields." We have already seen that he stood Rodrigo in good stead in the affair of the five Moorish kings: we next find him acting the part of the Samaritan's beast, and our hero in the novel character of a pilgrim.

Very soon after his marriage, Rodrigo made a pilgrimage to Compostela, to the shrine of Santiago, the patron saint of Spain. This was no wedding-trip, in the modern sense of the term; for instead of his bride, whom he left at home in the care of his mother,*

"Twenty young and brave hidalgos
With him did Rodrigo take:
Alms on every side he scattered
For God's and Our Lady's sake."

On the road he saw a leper in the midst of a slough, crying loudly for help. The generous youth on the instant dismounted and dragged him out; then, having seated him on his own beast, he led him to an inn, made him there sit down to supper with him at the same table, to the great wrath of the twenty hidalgos, and, finally, shared with him his bed. At midnight Rodrigo was awakened by a sharp and piercing blast blowing on his back. He started up in great alarm, and felt for the leper, but found him not in the bed. He sprung to his feet, and called for a light. A light was brought, but no leper could he find. He again lay down, when presently a figure, in robes of shining white, approached the bed, and thus spoke:—

"I Saint Lazarus am, Rodrigo;
Somewhat would I say to thee—

* In a former article it was stated that the romances make no mention of the Cid's mother: it should have been said that they do not mention her name.

I the leper am to whom
Thou hast shown such charity.
Thou of God art well beloved—
He hath granted this to thee,

That on whatsoe'er thou enterest,
Be it war, or what it may,
Thou shall end it to thine honor,
And shall prosper day by day.

To respect and pay thee reverence,
Moor or Christian ne'er shall fail,
None of all thy foes shall ever
Over thee in fight prevail.

Life shall bring thee no dishonor—
Thou shalt ever conqueror be;
Death shall find thee still victorious,
For God's blessing rests on thee."

With these prophetic words the saint vanished; the hero fell on his knees, and continued in thanksgiving to God and Holy Mary till the break of day, when he pursued his pilgrimage.

From the shrine at Compostela, Rodrigo turned his steps to Calahorra, a town on the frontiers of Castile and Aragon, the possession of which was contested by the kings of those realms. To avoid war, the monarchs agreed to settle the dispute by single combat, each appointing a knight to do battle in his name. Martin Gonzalez was chosen by Ramiro of Aragon, and our hero by King Fernando. On the first meeting of the combatants, Martin arrogantly boasted of his prowess and his certainty of victory:

"Sore, Rodrigo, must thou tremble,
Now to meet me in the fight,
Since thy head will soon be sever'd
For a trophy of my might.

Never more to thine own castle
Wilt thou turn Babieca's rein;
Never will thy lov'd Ximena
See thee at her side again."

Rodrigo replied:

"Thou mayst be right stout and valiant,
But thy boastings prove it not;
Truce to words—we come to combat,
Not with tongues, but swords, I wot.

In the hands of God Almighty
Doth the victory abide;
And He will on him bestow it
Who hath right upon his side."

We have here an instance, and many such will be found in the romances of the Cid, of the belief prevalent in the chivalrous ages, that right and might were in certain cases identical, that God was peculiarly the God of battles, and that trial by combat was the most efficacious mode of exercising justice.

After the prophecy above recounted, it were needless to say that the boasting knight was vanquished and slain, and that Calahorra was annexed to the kingdom of Castile.

"Loud to arms the trumpets sounded,
Beat the drums the call to war,—
Deadly strife, and fire, and slaughter,
Were proclaimed wide and far.

Ruy my Cid his warmen gathering,
Marshall'd them right speedily;
Then forth came Ximena Gomez,
And all tearfully did cry,
King of my soul! lord of my bosom! stay!
Oh, whither go'st thou? leave me not, I pray!'

Moved by her sad complainings,
Lo! the Cid his pain confess;
Weeping sore, he claspt Ximena,
Claspt his lov'd one to his breast.

'Weep not, lady dear,' he whispereth;
'Till I come back, dry thine eye!'
Stedfast still on him she gazeth,
And still bitterly doth cry,
'King of my soul! lord of my bosom! stay!
Oh, whither go'st thou? leave me not, I pray!'"

On what warlike expedition Rodrigo was bound when this tender parting took place is not made evident by the romances; but it was probable that he was hastening to attack the Moors, "great hosts" of whom about this time overran Estremadura. He overtook them, put them to flight, freed the captives they had made, slew so many of the infidels "that the number could not be counted," and returned to Bivar laden with spoil and glory.

The city of Coimbra in Portugal had for seven years been invested by King Fernando, who was despairing of overcoming the resistance of the Moors, when St. James the apostle, in the guise of a knight in white robes and burnished armour, and mounted on a snowy charger, delivered the city into the hands of the Christians. On the mosque being consecrated as a church, our hero was therein created a knight; for it seems by the Chronicle, as well as by the romances, that up to this time he was nothing but an esquire. The king girt on the sword with his own hands, and kissed his lips as a knightly salutation; while, to testify his great respect for the young hero, he refrained from striking the customary blow on the neck.* The queen, to do him honour, brought him his horse, and the Infanta Urraca stooped to attach the golden spurs. The king then called upon him to exercise his newly acquired privilege of knighting others, and he accordingly dubbed nine valiant esquires before the altar.

Whilst Rodrigo was with the king's court in the city of Zamora, there came to him messengers from the five Moorish kings he had conquered, bringing him tribute. This consisted of a hundred horses, all richly caparisoned:

"Twenty were of dapple grey,
Twenty were as ermine white,
Thirty were of hardy sorrel,
Thirty were as black as night;"

together with many rare jewels for his lady Ximena, and chests of silken apparel for his attendant hidalgos. Kneeling at Rodrigo's feet, the messengers offered him these gifts in token of the allegiance of their masters to him their Cid or lord.

"Out then spake Rodrigo Diaz,
'Friends, I wot, ye err in this;
I am neither lord nor master
Where the king Fernando is.
All ye bring to him pertaineth—
Nought can I, his vassal, claim.'"

The king, charmed with the humility of so noble and doughty a knight, refused to accept any portion of the tribute, and replied to the messengers—

"Say ye to your lords, albeit
This their Cid no crown doth wear,
To no monarch is he second;
With myself he may compare.

All my realm, my wealth, my power,
To this knight's good sword I owe;
To possess so brave a vassal,
Well it pleaseth me, I trow."

Rodrigo sent back the messengers laden with pre-

* Father Berganza, in his 'Antiquities of Spain,' says that the buffet was given with the hand upon the neck, with the words, "Awake, and sleep not in affairs of chivalry!" and that it was also usual to say, "Be a good and faithful soldier of the realm!" but that King Fernando spared the buffet in this instance, as he knew the Cid needed not such exhortation.

sents; and "from that day forth," says the romance "he was called the Cid, a name given by the Moors to a man of valour and high estate."



["King of my soul! lord of my bosom! stay!"]

HOW IS A STEAM-BOAT PROPELLED?

[Continued from page 56.]

The motion of a ship or boat on the surface of the water is brought about by means differing greatly from the tractive forces exhibited in land travelling, owing to the peculiar nature of the liquid medium through or on which the vessel moves. If we view the progression of a vessel by canal, by tide or current, by sail, by oars, or by steam, we find that however much these methods differ from each other, they differ still more from land travelling. On a canal we see a heavily-laden barge drawn along with comparative ease by a single horse: the resistance of the water to the progress of the barge is so small, compared with the friction of a common road, and the surface of the water is so perfectly level, that many tons weight are drawn by a single horse with little exertion. In the case of the ebb and flow of a tide in a river, or a current in the open sea, the material on which the vessel rests is itself in motion, and bears along the vessel with it, at a quicker or slower rate, according to the weight of the vessel and the power of the tide or current.

When we come to consider the action of sails, we find a kind of reversal of the canal movement, the vessel being pushed along, instead of pulled. The horse is exchanged for the wind, the rope is exchanged for sails, a single point of attachment is exchanged for an extensive surface, and a tractive force in front is exchanged for a propelling force from behind. But still the two kinds of motion are brought about by somewhat analogous means, for in each case the moving force is above the surface of the water, and independent of it.

When, however, the action of an oar in an open boat is considered, we find it to depend on wholly different principles; and a little reflection will show, that however opposite this action may appear to that of paddles in a steam-vessel, the explanation of the one will serve also for the other. The canal-boat and the sailing-vessel move easily, because the resistance of the water is small; the rowing-boat and the steam-boat move easily, because the resistance of the water is great; but this apparent anomaly is explained away when we view the matter a little more closely. A rowing-boat penetrates so little into the water, that it may almost be said to lie on the surface. Under these circumstances the oar acts as a lever, of which the power is the boatman's hand, the fulcrum appears to be the notch in the edge of the boat, and the weight the water moved by the blade of the oar. But this appearance does not represent the real fact; for while the boatman is working the oar as a lever, it is more easy for the boat to pass on the surface of the water in one direction, than for the blade of the oar to pass through the water in the opposite direction, on account of the resistance to the latter motion. Both of these motions occur in practice; but still the former so far predominates, as to give a progressive movement to the boat; and to constitute the oar a lever of that variety which mechanical philosophers term the *second kind*, that is, where the weight to be moved (the boat) is between the power (the hand) and the fulcrum (the blade of the oar).

Now we shall find that the action of a steam-boat paddle very much resembles that of the oar. These paddles are large wheels, sometimes as much as thirty feet in diameter, attached to the side of the vessel, and set into rotation. Each wheel is provided with boards or floats, ranged parallel, or nearly parallel, with the axis, and is immersed in the water to a depth greater or less, according to circumstances, but always less than one-half, so that the larger portion shall be above water. When these float-boards, in the course of their revolution, dip into the water, what results? They must pass at various angles through the water, but this water must be *moved* in order to permit the passage: a resistance to this motion is immediately excited; and this resistance is so powerful, that the whole body of the steam-ship, however vast and weighty it may be, is propelled in the opposite direction to that in which the paddle-board strives to move. It is a recoil, a rebound, a reaction, such as occurs, with more or less modification, wherever motion is produced. The gases resulting from the ignition of gunpowder propel the cannon-ball in one direction, but they give the cannon itself a recoil in the opposite direction: the explosive compound in a rocket sends a train of sparks in one direction, but also sends the rocket itself in another. So likewise with the oar and the paddle-board; each succeeds in passing through the water, but the resistance of the water to this motion causes the vessel to which the oar or the board is attached to advance in the opposite direction.

When, therefore, a steam-boat passenger sees the complicated mechanism beneath the deck, he must not suppose that steam acts in the same manner as wind, by driving the vessel onward; but must first call to mind the action of an oar in an open boat, and then understand that the sole object of the mechanism is to give a revolving motion to the paddle-wheels. If this motion could be equally well produced by other means than steam, then the steam-engine might be wholly dispensed with.

It ought not to excite much surprise that the steam-engine, when its value as a moving-power became known, should be regarded as a means whereby a vessel might be moved. That the rotation of wheels dipping in the water would propel a vessel, was known long ago. William Bourne, in 1578, wrote

thus:—"And furthermore, you may make a boat to go without oars or sail, by the placing of certain wheels on the outside of the boat, and so turning the wheels by some provision, and so the wheels shall make the boat go." The Marquis of Worcester afterwards made some indistinct allusion to the employment of steam-power for such a purpose; and Savary also proposed to propel a vessel by raising water into an elevated cistern through the medium of his steam-engine, and then causing the water to fall upon the floats of a wheel. About a century ago, Jonathan Hulls published a description of a boat with two paddle-wheels projecting from the stern, and two steam (or rather, atmospheric) engines in the body of the boat: by the connection of pistons, ropes, and pulleys, he explained how the wheels might be made to revolve. From that time numerous attempts were made to apply steam-power to this purpose; but none succeeded till 1788, when Mr. Miller, a Scottish gentleman, had the pleasure of seeing a little steam-boat pass along Dalswinton Lake, at the rate of five miles an hour: two boats were fastened side to side; a boiler was placed in one, a small steam-engine in the other, and a paddle-wheel was suspended between them. From this time, the gradual rise and progress of steam-navigation, the labours of Fulton and Stevens in America, of Bell and Napier at Edinburgh, and the development and combination of such powers as are exhibited in the "Great Western" and "President" steam-ships, form a large subject, into which we cannot here enter.

We have recently explained the difference between a *high-pressure* and a *low-pressure* steam-engine. When, therefore, we say that most English steam-vessels are propelled by the latter kind, and American vessels by the former, the reader will understand how it is that steam-boiler explosions occur so much more frequently in America than in England, the steam employed being of a far higher temperature and pressure. Wherever a high-pressure engine can be conveniently employed, a much smaller amount of mechanism is required than in a condensing-engine; and this seems to have been one reason why the former class has been employed to a considerable extent in America.

In the usual construction of English steam-boats we see various parts of the mechanism through openings in the deck; but we do not see anywhere that which corresponds to the *beam* or *lever* of a common steam-engine. At one part we see a piston-rod working up and down in a cylinder, and at another a pair of cranks working the axle of the paddle-wheel, but no appearance of the beam which connects the one with the other. The truth is, that the whole affair is turned upside down with respect to the position of the beam. There is a beam, but it occupies nearly the lowest position in the engine; and the connecting-rods between the beam and the crank at one end, and the piston at the other, proceed *upwards*. The object of this is to keep the bulk and weight of the engine as low as possible in the hull of the vessel.

At stated intervals the passenger espies three or four opened doors, through which a fierce fire is visible: these are the doors of the furnace, over which is a very long boiler containing water. From this boiler a metallic pipe, frequently coated with some non-conducting substance, conveys steam to a small receptacle near the cylinder; and, by the action of valves, this steam is admitted to the cylinder alternately above and below the piston. The vertical motion of the piston-rod then ensues in the manner explained in a recent paper, by the aid of a condensing apparatus, which is generally placed so low as to be out of view to a person on deck. The short piston-rod which meets the eye of the passenger is not that which connects it with the beam; this connection is beneath the cylinder, where a beam oscillates to and fro, as in a common land-engine. At the remote end of this beam we see, through a separate opening in the deck, the mechanism which transfers the motion, by means of a crank, to the axle of the paddle-wheels. This axis extends all across the vessel; and, in many instances, projects half way above the deck, where a semi-cylindrical case shields it from injury or interruption. At each end of this axis a paddle-wheel is fixed; so that when the axis rotates, the wheel must rotate also.

We have described these several parts as if they were all single, but almost every part of the marine engine, with the exception of the boiler and furnace, is double; thus, there are two cylinders, two cranks, &c.; for it is found that the required object is better attained by this arrangement, than by one larger assemblage of mechanism.

In most of the American steam-vessels the beam of the engine is uppermost, and the whole of the mechanism is placed on the upper part of the vessel. The object of this seems to be that a larger space of cabin-room is thus procured within the body of the vessel. Most persons have probably seen representations of the vessels plying on the Mississippi, in which nearly the whole of the machinery is above the level of the water. This gives a less elegant appearance to the exterior of the vessel than that presented by English steamers, but it renders the interior much more commodious.

To obtain, then, an idea of the philosophy of the motion of a steam-boat, we have to regard three things, viz.: the action of a common steam-engine in producing a reciprocating or up and down motion in a piston-rod; the rotation of a large paddle-wheel, by connecting it with this piston-rod; and the motion of the vessel, produced by a species of reaction or recoil, when this revolving wheel is partly immersed in the water.

Mode of preparing Wine in Modern Greece.—In each vineyard is an oblong receiver, six feet by nine in length, and three feet by six in breadth, a couple of feet deep, and lined with cement to make it water-proof; on one of the narrow sides the floor is inclined, that the expressed juice may flow through an opening into another receiver, generally circular, which is a few feet broad, and also made water-proof in the same manner as the upper one. At the time of vintage the ripe bunches are cut off, and thrown into the upper and larger receiver, where they are trodden by the naked feet of men and the oldest women. The juice runs off into the lower cistern, whence it is drawn off into Ασκι. These are rough goat-skins, turned with the hairy side inwards, and bound tightly together at the feet; the liquor is poured in at the neck, which is then tightly tied. One of these skins being tied on each side of the pack-saddle, it is thus carried home. Being then thrown into the owner's cask, perhaps he possesses but one, fermentation commences. The better kind of wine is sometimes put into large jugs. Already in the vineyard, when with the husks, fermentation has commenced, and some of the husks pass into the lower receiver; but when at home, to assist its progress, a quarter part of water is added, often more, and as no one knows how long the whole ought to ferment, they wait until no more bubbles appear, and the small vinegar flies are found; the cask is then closed, soon after tapped, and the wine gradually drawn off, the dregs remaining. In order that the new wine may keep, a number of green pine cones, or else half fluid or grated resin, is thrown in. This is the resinate, or krassik, a word generally omitted. When no resin is put to the wine, they generally add, as soon as it commences to turn sour, a considerable quantity of burnt gypsum, which unites with the acid, forming an acetate of lime, that is mixed with the wine and makes it sweeter, but causes headache and illness. The resinous wine also at first causes headache, but the action of the turpentine causes it soon to pass away. The new wine is very thick, it induces colic and disordered stomach.—*Extract from Fiedler's Reise durch Griechenland, in the Foreign Quarterly Review.*



[a, Bull-dog; b, Mastiff; c, Ban-dog.]

DOGS, WILD AND DOMESTIC.

[Concluded from p. 59.]

We now enter upon a group of dogs distinguished by the shortness of the muzzle and the breadth of the head, this latter character resulting not from a corresponding development of the brain, but from the magnitude of the temporal muscles, which are attached to a bony ridge passing down the median line of the skull. The expression of the eyes is lowering and ferocious; the jaws are very strong, the lips pendulous; the general form is thick-set and robust; the limbs are muscular.

This group comprehends the Bull-dog, the Mastiff, and their allies. In sagacity and intelligence the dogs of the present section are not to be compared to the Newfoundland dog, the spaniel, or the shepherd's dog; they surpass all, however, in determined courage and prowess in combat. In early times the English mastiff was celebrated for its strength and resolution, characteristics which did not fail to attract the attention of the Romans when this island formed a part of their widely-spread empire. To a people in whom a partiality for scenes of bloodshed and slaughter, and for the sanguinary games of the amphitheatre, was a ruling passion, dogs so fitted to gratify their taste were peculiarly acceptable, and accordingly we find that they were bred and reared by officers specially appointed, who selected such as were distinguished for combative qualities, and sent them to Rome for the service of the amphitheatres, where they were matched in fight with various beasts of prey. Dr. Caius, a naturalist of the time of Elizabeth, states that three were reckoned a match for a bear, and four for a lion.

Stow, in his 'Annals,' gives us the account of an engagement between three mastiffs and a lion, which took place in the presence of James I. The battle reminds us of a recent occurrence, excepting that the dogs which fought with Nero and Wallace were not mastiffs, but half-bred bull-dogs. "One of the dogs," says Stow, "being put into the den, was soon disabled by the lion, which took it by the head and neck, and dragged it about. Another dog was then let loose, and served in the same manner; but the third, being put in, immediately seized the lion by the lip, and held him for a considerable time: till, being severely torn by his claws, the dog was obliged to quit its hold, and the lion, greatly exhausted in the conflict, refused to renew the engagement, but, taking a sudden leap over the dogs, fled into the interior part of his den. Two of the dogs soon died of their wounds; the last survived." The mastiff is by far the most sagacious of the present section, and, of all other dogs, makes the best guardian of property. It is attached to its master, but towards strangers is fierce and suspicious. Its bark is deep and sonorous.

Though the mastiff has by no means the keen sense of smell which the hound possesses, it seems to be (at least such is our opinion, and that not hastily formed) either an offset from that branch, or a cognate branch from the same root. The mastiff, however, has a finer scent than persons are generally aware of, and its hearing is very acute. A dog of this breed, chained to his kennel, and never suffered to wander about the pre-

mises, nor treated as a friend and companion, affords but a poor example of what the animal really is. Confinement spoils its temper and cramps the noble qualities of its mind. We knew a dog of this kind (as purely bred as most in the present day), which, possessing immense strength and indomitable courage, was yet one of the gentlest of animals. He suffered the children of the house and even strange children to pull him about as they pleased; they might sit upon him, or pull his ears, and roughly too, as children will, and yet he never manifested anger or impatience by voice or action, but submitted quietly and good humouredly; small dogs might snarl and snap at him, but he bore their petulance unmoved. This animal was the guardian of a manufactory, and he knew every person on the establishment. He would permit strangers to come in during the day, merely regarding them with an attentive gaze, but offering them no molestation. At night, when the gates of the premises were closed, he seemed to assume a new character: he was then as fierce as he had been gentle during the day; he would not allow even the ordinary workmen to enter the yard, and several times seized men who attempted, on the strength of knowing him, to pass through, holding them till succour arrived.

A personal friend of the writer's, some time since, on a visit at a gentleman's house in the country, was taking a moonlight walk through the shrubbery and pleasure-grounds, when he was startled by a noise behind him; on turning his head, he perceived a large mastiff, which was ordinarily let loose as evening closed, and which had tracked him through the grounds. The dog with a fierce growl roughly seized him; our friend wisely deemed passive obedience and non-resistance the most prudent, if not the most courageous part for him to play, and was unceremoniously led back through the grounds to the hall-door; here he was relieved by the master of the house. Subsequently assured that he had no cause to fear, he repeated his walk; he found the dog again at his side, but the animal walked quietly with him, and acknowledged in the usual way his words of conciliation. On these instances of sagacity (sagacity of a kind very different from that displayed by the shepherd's dog or the setter) there needs no comment.

We have said that the mastiff is allied to the hound. The pendulous ear, not so large in the mastiff as in the hound, the thick hanging lips, the broad moist nose, the brindled markings, and the general figure, attest the affinity. The mastiff is larger and stronger than the largest hound, and useless for the chace. This inutility for the chace, however, is no proof of great diversity of origin. It must be remembered that particular instincts and qualities are acquired, and that the excellences of the hound are the result of long-continued and judicious culture. We do not say that the mastiff can be converted into the hound, but we say that two branches from the same root may be so cultured as to assume, to a given point, diverse characteristics.

The Thibet mastiff belongs to the present section. This huge dog is kept by the natives of the Thibet range of hills as a guardian of their flocks and their villages. It is very fierce, and its bark is loud and terrific; the colour is black.

Spain presents us with a fine breed of mastiffs, of which kind are those brought from Cuba: both Spanish and Cuban mastiffs are to be seen in the gardens of Zoological Society. They are less in stature than the English mastiff, and of a reddish-brown colour, with black muzzles. They make excellent watch-dogs, and are very courageous, attacking the bull and the bear with determined resolution.

The ban-dog appears to be a term given to any of the fierce animals of the present section, which are, in ordinary cases, kept chained or secured in kennels. Bewick, however, expressly applies it to a dog of which he gives an excellent figure, and which he states to differ from the mastiff in being lighter, more active and vigilant, but not so large and powerful: its muzzle, besides, is not so heavy, and it possesses in some degree the scent of the hound. Its hair is described as being rather rough, and generally of a yellowish-grey, streaked with shades of a black or brown colour. It is ferocious, and full of energy. Bewick says that this dog is seldom to be seen in the present day. We have, however, more than once had occasion to notice varieties of the mastiff so closely agreeing with Bewick's figure and description as to convince us that he took both these from nature.

One of the dogs of this kind which we knew, belonged to a man living near Manchester. It was intelligent, and very much attached to its master; but very savage, and not to be trusted by strangers. Its attack was sudden and impetuous; and once to offend it, was to make it an unforgiving foe. On one occasion its master, to show its attachment to himself and its courage in defending him, having secured it properly, asked us to pretend to strike him: we did so: the fury and the struggles of the dog to get at us may be conceived, but can scarcely be described, and dearly should we have paid for our presumption had it broken its fastenings. Previously to that time we had been on friendly terms with the animal; ever afterwards it strove to attack us, and we never ventured near the house without an assurance that the dog was chained up.

Mr. Bell, in his 'History of British Quadrupeds,' does not notice this breed; perhaps because it is not pure: the individual to which we have alluded appeared as if between the mastiff and bull-dog, crossed with the drover's dog. This, however, is only a supposition. Its master regarded it as identical with Bewick's ban-dog, and certainly nothing could be closer than it was to the figure he has given.

Of all the dogs of this section, none surpass in obstinacy and ferocity the bull-dog: this fierce creature seems to be peculiar to our island; or rather, perhaps, in no other country has the breed been so carefully cultivated. The bull-dog is smaller than the mastiff, but more compactly formed; the bust is broad, the chest deep, the loins narrow, the tail slender and arched up, and, with the exception of the head and neck, the figure approximates to that of the greyhound, the limbs being, however, shorter and more robust. The head is broad and thick, the muzzle short and deep, the jaws strong, and the lower jaw often advances, so that the inferior incisor teeth overshoot the upper. The ears are short and semi-erect, the nostrils distended, the eyes scowling, and the whole expression calculated to inspire terror. Of the brutal use to which this dog was formerly, nay, recently applied, we shall say nothing: all have heard of the barbarous custom of bull-baiting, so common in some countries, and but lately abolished; and all are aware of the manner in which this dog attacks his enemy, and how tenaciously he maintains his hold.

In all its habits and propensities, the bull-dog is essentially gladiatorial—it is a fighting dog, and nothing else: its intelligence is very limited; and though we have known dogs of this breed attached to their masters, they exhibited, even in their feelings of attachment, an apathy, in perfect contrast to the Newfoundland, the watch-dog, or the spaniel. These latter dogs delight to accompany their master in his walks, and scour the fields and lanes in the exuberance of delight; the bull-dog skulks at its master's heels, and regards with a suspicious glance everything and everybody that passes by; nor indeed is it safe to approach

the animal, for it often attacks without the slightest provocation.

A cross breed between the bull-dog and the terrier is celebrated for spirit and determination.

It has been usual to consider the pug-dog as a degenerate variety of the bull-dog, but we doubt the correctness of this theory. It has indeed somewhat the aspect of the bull-dog, on a miniature scale; but the similarity is more in superficial appearance than reality. The pug is a little round-headed short-nosed dog, with a preternatural abbreviation of the muzzle, and with a tightly twisted tail. Like the Gilloros trout, it is a specimen of hereditary malformation. Not so the bull-dog, in which the bones of the skull and the temporal muscles are finely developed, and in which the muzzle and head are in perfect harmony.

The pug-dog is snarling and ill tempered; but cowardly, and by no means remarkable for intelligence. Formerly it was in great esteem as a pet, but is now little valued, and not often kept.

From this cursory review of the principal breeds of dogs with which we are acquainted, let us return to our starting-point, the question at issue as to the original source of the domestic dog. This, notwithstanding the opinion of many eminent naturalists, we cannot admit to be the wolf. Mr. Bell indeed argues in favour of this theory; and Dr. Richardson, that the Esquimaux dogs at least are derived from that animal. If, however, it be proved, which it really is not, that the wolf is the source whence the Esquimaux dog has sprung, does it follow as a consequence that all dogs have descended from the same origin? By no means. If then one breed has its own distinct origin, every other breed may have respectively theirs also: one may be derived from the Canis primævis, another from a lost source, and so on; and thus we may come to the opinion of Pallas, that the domestic dog is not a species at all, but a factitious being, the production of several distinct but closely allied animals, capable of breeding *inter se*, and of producing a fertile progeny.

Such, then, is the obscurity in which the origin of the dog is involved. It is a subject which has exercised the attention and called forth the theories of many able naturalists, but it remains still in the midst of difficulties and perplexity.

CHAUCER'S PORTRAIT GALLERY.

THE COOK.

The next character that we shall introduce to our reader from this "Comedy not intended for the Stage," as Chaucer's greatest work has been happily designated, is the Cook; and that he may be received with due respect, we prefix a few notices illustrative of his social importance in this country from a very early period. These notices must be necessarily indirect, as referring rather to his vocation than to him. Of the Cook, history says little; of the banquets set forth by his skill before the highest and mightiest of the land, and on the most interesting and eventful occasions, it, on the contrary, furnishes many particulars not unworthy of more detail than our space or our object will here admit of. The *art* of cookery in this country may be dated from the Norman conquest: our Saxon ancestors appear to have distinguished themselves for the excess rather than for the quality of their food; whilst the Normans, as William of Malmsbury expressly states, were delicate in the choice of meats and drinks,—seldom exceeded the bounds of temperance, and whilst living less expensively, lived also with more elegance. John of Salisbury mentions that he was present at a great entertainment where there were served up the choicest luxuries of Babylon and Constantinople, of Palestine and Alexandria, of Tripoli, Syria, and Phœnicia. These delicacies of course could only be obtained at a great expenditure, and must have required cooks to do them justice. Such, no doubt, existed, and were so highly esteemed that estates were granted them to be held by the tenure of dressing a particular dish. One of the most striking evidences of the magnificence of the feasts of the Norman court is daily before our eyes in that finest of European halls, the one at Westminster: that hall, we are told by Stow, was built by William Rufus for his dining-room. As we approach nearer to the period of the 'Canterbury Tales' (written towards the close of the fourteenth century), we find the love of display, or of hospitality, or of good living, or perhaps of all combined, more and more apparent in the banquets of the court and of many of the principal nobles of the country. At the marriage feast of Richard, earl of Cornwall, in 1243, thirty thousand dishes were served up; and upon a similar occasion, the marriage of Lionel, duke of Clarence, the third son of Edward III., thirty courses were included in the bill of fare But such enjoyments, if enjoyments they can be called, were no longer confined to the king or his nobles, or even to the lesser gentry of the country, for in the seventeenth year of Edward's reign rules were established forbidding any *common* man from having *dainty dishes* at his table, or costly drink. Cookery had indeed now become a most complicated and artificial system, as the details we possess clearly prove; and the cook himself a person of sufficient importance to be introduced as one of the pilgrims to Canterbury. Here is Chaucer's description of him:—

> "A Cook they hadden with them for the nones,*
> To boil the chickens, and the marrow bones,
> And poudre marchant tart, and galingale.†
> Well could he know a draught of London ale,
> He couldé roast, and seethe, and broil, and fry,
> Maken mortrewés, and well bake a pie;
> * * * * * * *
> For blanc-manger that made he with the best."

In the dishes here enumerated we have doubtless an epitome of the taste of the middle, perhaps also of the higher classes at this period, in cookery, though of the nature of some of them—those specified in the third line—we are ignorant. Mortrewés, we find from a printed MS. of the Royal Society on 'Ancient Cookery,' consisted of pork or other meat brayed in a mortar (in the French, une mortreuse, and hence the name), mixed with milk, eggs, spices, &c., and coloured very deep with saffron. As to the blanc-manger, for which it seems the cook was particularly famous, we need only say that the following recipe for making it, which we have found in a curious little volume in the British Museum bearing the title of 'A Proper new Booke of Cookery,' and dated 1575, will, we presume, be new to the culinary artists of the present day:—"Take a capon and cut out the braune of him *alive*, and parboyle the braune tyll the flesh come from the boone, and then dry him as dry as you can, in a fayre clothe; then take a payre of Cardes, and card him as small as possible; and then take a pottell of mylke, and a pottell of creame, and halfe a pound of rye flower, and your carded brawen of the capon, and put all into a panne, and styr it altogether, and set it upon the fyre, and when it beginneth to boyle put therto halfe a pound of beaten sugar, and a saucer full of roose water, and so let it boyle tyll it be very thycke; then put it into a charger till it be colde," &c. As it is remarked that our Cook is a thorough judge of London ale, it should seem that the metropolitan breweries were in particular esteem, and the suppos-

* For the occasion. † Sweet cypress.

tion is borne out by the circumstance mentioned by Tyrwhitt, in his note on this passage, in his edition of the 'Canterbury Tales,' that in the accounts of the feast given by Archbishop Warham in 1504, London ale was then priced 5s. a barrel more than that of Kent.

We should fear the Cook has not much enjoyed, even if he has at all listened to the glowing poetry of the Knight's tale; but the very free stories told by the Miller and the Reve, which immediately follow, are evidently greatly to his taste; the latter, indeed, has scarcely finished, before he marked his approval very significantly—

"He clawed [or clapped] him on the back;"

and immediately offers, unasked, to tell a tale of

"A little jape* that fell in our city;"

and in the exhilaration of his spirits, threatens Harry Bailly, the host, who has been bantering him, with a tale of 'an hostelere.' The tale he commences for the present is of a dissolute apprentice, but is left in Chaucer's manuscripts unfinished. We must not omit to notice that the host's banter furnishes us with two or three particulars as to the Cook's position, name, &c.:

"Many a Jack of Dover hast thou sold
That hath been twies hot and twies cold.
Of many a pilgrim hast thou Christé's curse,
For of thy parsley yet fare they the worse,
That they have eaten in thy stubble-goose,†
For in thy shop go'th many a flié loose.
Now tell on, gentle Roger, by thy name," &c.

The pilgrims continue their journey; the tales, now of the broadest humour, now of the deepest pathos, follow in regular succession; but intellectual enjoyments alone are far from satisfactory to the Cook. He accordingly applies himself to a much more accustomed, and, to him, more substantial pleasure; what that was, the ensuing extracts will show. At the conclusion of the Canon Yeoman's tale, the Host, looking back, sees the Cook fast asleep upon his horse:

"Then gan our host to japé and to play;
And saidé, Sirs, what? Dun is in the mire.
Is there ne man for prairie ne for hire
That will awaken our fellow behind?
A thief him might full lightly rob and bind:
See how he nappeth, see, for cockés bones,
As he would fallen from his horse at ones:
Is that a cook of London?" &c.

He is awakened, looking "full pale," and excuses himself by saying,

"There is fall'n on me such heaviness,
N'ot I not why,‡ that me were lever sleep,
Than the best gallon wine that is in Cheap."

The Host has determined that he shall now tell a tale by way of penance; but the Manciple offers to undertake that task for him, saying,

"See how he gapeth, lo, this drunken wight,
As though he would us swallow anon right."

It is but too true,—the Cook is drunk; and at last, vexed by the jibes of the Manciple, and his own inability to answer him in his present state, "he gan nod fast," and fell from his horse. Then

"There was great shoving bothé to and fro,
To lift him up, and mochel care and woe."

The humorous Host now reminds the Manciple that the Cook, another day, will be revenged for this. "I mene," he says,

"He speaken will of smallé things,
As for to pinchen at thy reckonings,*
That were not honest if it came to proof."

The Manciple, it must be observed, was an officer who had the care of purchasing victuals for an inn of court; and there might consequently have been transactions between the Cook and the Manciple not very creditable to the latter if known. He is frightened, at all events,—

"I would not wrathen him, so mote I thrive,"

and, with admirable judgment, makes peace by

"A draught of wine, yea, of a ripé grape."

We cannot resist the temptation of appending to this picture of a cook of the fourteenth century, Ben Jonson's description of a more consummate artist, two centuries later:—

"A master cook! why, he is the man of men.
For a professor; he designs, he draws,
He paints, he carves, he builds, he fortifies,
Makes citadels of curious fowl and fish.
Some he dry-ditches, some motes round with broths,
Mounts marrow-bones, cuts fifty-angled custards,
Rears bulwark pies; and for his outer works,
He raiseth ramparts of immortal crust,
And teacheth all the tactics at one dinner—
What ranks, what files, to put his dishes in,
The whole art military! Then he knows
The influence of the stars upon his meats,
And all their seasons, tempers, qualities;
And so to fit his relishes and sauces.
He has nature in a pot 'bove all the chemists
Or bare-breech'd brethren of the rosy cross.
He is an architect, an engineer,
A soldier, a physician, a philosopher,
A general mathematician."

Honey of the Hymettus.—This spot was, certainly, at one time more abundantly supplied with flowers than at present; these, too, so strongly scented, that hounds, on that account, frequently lost trace of the game when hunting on these regions. But there is no land like Greece, in which, for centuries, the works not only of men, but of nature also, have been, as far as possible, destroyed. Trees and shrubs were cut down, in the continued wars, without any thought of the consequence; and what the axe spared the shepherds burned, in order to raise from the ashes, during the first year, a few blades of grass for their goats. . . . Were not the Grecian climate so favourable, the greatest part of the country must long since have become a bare, stony, and rocky wilderness. The Hymettus now has no better vegetation than the mountains of Attica. The honey of the Laurion mountains was much prized (Erica Mediterranea grows there in abundance). Throughout Greece honey is more agreeable and aromatic than in other lands, owing to the heat being moderate, for which reason the juices of the plants are in a more concentrated state. The honey of the Hymettus no longer possesses its superiority; it is, in other neighbourhoods, finer and more aromatic, *e.g.* in many of the Cyclades, especially in Sekino. The greatest quantity of honey is obtained from the monastery of Syrian to the north-east of the city; it is delivered to the local archbishop. The shepherds at other parts of the Hymettus have also, most probably, bee-hives; and the honey from Pentelicon is also reckoned among the Hymettic. The number of hives on these mountains yielding honey has been averaged, of late years, at five thousand. The principal food of these bees is Satureia capitata (Saturei), then Lentiscus, Cistus, Salvia, Lavandula, and other herbs. Otherwise the Hymettus is very bare; on its declivities and in some of the dales are wild olives, with shrubs of myrtle, laurel, and oleander. Pinus maritima grows on its summit very imperfectly, but near the monastery it is pretty. Besides this there grow on the Hymettus hyacinths, Amaryllis lutea, dark violet crocus, &c.—*Extract from Fiedler's Reise durch Griechenland, in the Foreign Quarterly Review.*

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* To japé,—to jest or joke.
† A goose fed upon stubble-grounds.
‡ Nor know I not why, or, nor know I why.

* That is to say, to discover flaws in the reckonings.

A DAY AT A FLINT-GLASS FACTORY.



[Glass blowing Furnace.]

"IT might contribute to dispose us to a kinder regard for the labours of one another, if we were to consider from what unpromising beginnings the most useful productions of art have probably arisen. Who, when he first saw the sand or ashes, by a casual intenseness of heat, melted into a metalline form, rugged with excrescences and clouded with impurities, would have imagined that in this shapeless lump lay concealed so many conveniences of life as would, in time, constitute a great part of the happiness of the world? Yet, by some such fortuitous liquefaction was mankind taught to procure a body, at once, in a high degree, solid and transparent; which might admit the light of the sun, and exclude the violence of the wind; which might extend the sight of the philosopher to new ranges of existence, and charm him, at one time, with the unbounded extent of material creation, and at another with the endless subordination of animal life; and, what is of yet more importance, might supply the decays of nature, and succour old age with subsidiary sight. Thus was the first artificer in glass employed, though without his knowledge or expectation. He was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures: he was enabling the student to contemplate nature, and the beauty to behold herself."

A century has nearly elapsed since Dr. Johnson wrote this forcible and beautiful paragraph; and nothing has occurred, in the subsequent history of manufactures, to lessen its truth or beauty. Many opaque substances are capable of assuming a form more or less vitreous or glass-like; such as earths, some acids and salts, and metallic oxides. In porcelain we see an example of partial vitrification; for the granular texture is exceedingly fine, and a slight translucency is produced. But complete vitrification never results until after the fusion or melting of the ingredients; and we know of no means by which porcelain clay or any other earth may be melted in its simple state. But when two kinds of earth are mixed together, or, still better, when a siliceous earth is mixed with certain crystalline salts, perfect fusion may be produced, and a nearer approach to transparent glass may result. Again, certain metallic oxides may be made to assume a vitreous form, and, when mixed with silex, to produce a glass possessing valuable properties. We may thence regard glass, generally speaking, as resulting from the mixture and fusion of these three kinds of ingredients; and the purpose fulfilled by each may be thus understood:—the siliceous substance is the vitrifiable ingredient; the salt or alkali is the flux, by mixture with which the silex becomes fusible; and the metallic oxide, besides acting as a flux, imparts certain qualities whereby one kind of glass is distinguishable from another.

Such is the nature of vitrification, a process which, if we may judge from the researches made within the last thirty or forty years in Egypt, and the discovery of the mode of deciphering the hieroglyphics so profusely displayed on Egyptian monuments, was known in very remote ages. Sir J. G. Wilkinson ('Manners and Customs of the Ancient Egyptians') adduces three distinct proofs that the art of glass-working was known in Egypt before the exodus of the children of Israel from that land, three thousand five hundred years ago. At

Beni-Hassan and at Thebes are paintings representing, in a very rude form, glass-blowers at work; and from the hieroglyphics accompanying them, it is found that they were executed in the reign of a monarch who occupied the throne at about that period. Again: images of glazed pottery were common at the period under consideration, the vitrified quality of which is of the same quality as glass; and therefore the mode of fusing, and the proper proportions of the ingredients for making glass, must have been already well known. Lastly, Sir J. G. Wilkinson adduces the instance of a glass bead about three-quarters of an inch in diameter, which Captain Henvey found at Thebes, and which contains in hieroglyphic characters the name of a monarch who lived fifteen hundred years before Christ.

The knowledge of the manufacture probably travelled from Egypt to Greece, and thence to Rome and modern Europe; and successive improvements have not only brought the art to a high degree of excellence, but have led to its subdivision into several kinds, such as flint-glass, plate-glass, window-glass, and green or bottle-glass making.

Confining ourselves to flint-glass, we now invite the reader's attention to the process of manufacture. The flint-glass works of Mr. Pellatt, which we have been permitted to visit for our present purpose, are situated in Holland Street, Blackfriars, and comprise the various buildings necessary for the production of flint-glass ware; such as a horse-mill, for grinding old melting-pots, as one of the ingredients in the manufacture of new ones; a room wherein ground or powdered clay is mixed and kneaded into a working state; another in which the pots are made; others for drying the manufactured pots; rooms for storing, washing, and preparing the alkaline salts; others for washing and drying the siliceous sand; a mixing-room, wherein the sand, alkali, and oxides are combined; two coking-ovens, or furnaces for converting coal into coke; the glass-house, with its working-furnaces, pot-furnace, and annealing-oven; glass-cutting and glass-engraving shops; and others for subsidiary purposes: the whole occupying an area of about three-fourths of an acre. The routine of operations in these departments will come successively under our notice.

In describing the vitrifiable qualities of various materials, we used the most general terms, in order to include all kinds of glass within our remarks; but it is necessary now to state the restrictions which are required in practice. Although most earthy substances may, by peculiar treatment, be wholly or partially vitrified, yet *silex*, or *flint*, is that which possesses the most valuable qualities. Again, although many alkaline and saline substances might be used as fluxing materials, yet soda and potash, in one or other of their forms, are those generally employed by the glass-maker. Lastly, although many metallic oxides might be similarly vitrified, yet oxide of lead is that which is most frequently employed. This being premised, we may state that the materials for flint-glass are nearly as follow:—One part of alkali (carbonate and nitrate of potash), two parts of oxide of lead, three parts of sea-sand, and a minute portion of the oxides of manganese and arsenic.

The term 'flint-glass' is given because flints were formerly employed as the siliceous material: they were made red-hot, and plunged into cold water, whereby they were so fractured and disintegrated as to be easily ground to powder. Sea-sand is, however, now found to answer the same purpose, at a less expenditure of time and trouble. The sand employed is obtained from the sea-shore at Lynn in Norfolk, and at Alum Bay, Isle of Wight; the qualities brought from hence being superior to most others. A few years ago, a portion of sand brought from Australia as ballast was found to answer the purpose of English sand, and was indeed expected to be superior; we believe, however, that the qualities of the three kinds are now ranked nearly on a level.

The sand, being impure when brought to the works, is conveyed to an upper room, and thrown into a trough containing water. This trough is capable of being closed, and is fixed on horizontal pivots, whereby a rocking motion can be given; and the sand, being thus driven from side to side in the water, and stirred with a spade, loses some of its impurities. The dirty water is emptied into a channel in the floor of the room; and the same process is repeated seven or eight times, until the sand becomes perfectly clean. It is then placed in a trough over an oven, through holes in which it passes, when partially dried, into the oven beneath, and, when dried, leaves the oven in the state of fine, glittering, white particles.

With regard to the alkali employed, there are reasons why potash, in the form of carbonate, is preferable to other kinds; the carbonic acid being, however, dissipated during the melting, and leaving the potash in a pure state. The carbonate of potash is obtained from Canada and the United States, and requires a process of washing previous to use. It is conveyed to an underground apartment, in which are washing-bins, settling-pans, evaporating-pans, and other necessary apparatus. The state to which the carbonate is brought by the process of cleansing, is that of fine white grains, differing but little, to an unpractised eye, from the prepared sand.

Oxide of lead, both in the form of litharge and of minium, or red-lead, is employed in flint-glass for the following reasons:—it is a powerful flux, enabling the sand to melt more readily, and it gives the glass greater density, greater power of refracting light, greater lustre, greater resistance to fracture from sudden heat and cold, and greater ductility during the working. If there be too much of this material, the glass becomes inconveniently soft.

The other ingredients in flint-glass, which are very small in quantity, are used as purifying and bleaching agents; and, as well as the oxide of lead, require but little preparation on the part of the glass-maker.

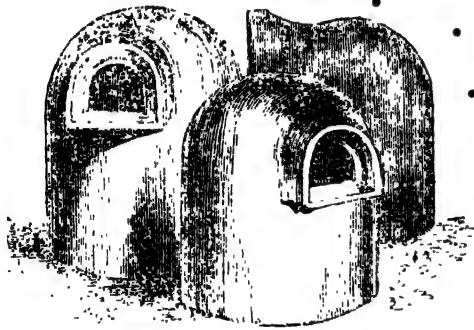
Let us assume that these several ingredients are in a sufficiently prepared state. They are taken to the 'mixing-room,' which contains several long bins or boxes; and after being weighed in proper proportions, the ingredients are sifted, mixed in the bins, and brought to a state fit for the melting-furnace. Here we must leave them for the present, remembering that the state in which the ingredients are put into the melting-pots is that of a salmon-coloured powder, the red tinge being given by the oxide of lead.

The melting-pots, and their mode of preparation, now deserve our notice. The reader will not be surprised to hear that the manufacture, drying, and baking of the glass-pots are important processes; since one pot, when filled, contains sixteen hundredweight of glass, the preservation and proper melting of which are essential to the subsequent labours of the glass-worker.

There is a particular kind of clay, brought from Stourbridge in Worcestershire, which seems better calculated than any other as a material for the glass-pots, and which is dug from the soil in a hard state, ground fine, barrelled, and sent up to London. The broken or worn-out pots are likewise found to be useful when employed in combination with new clay; four parts of new clay being mixed with one part of old pots, ground by a horse-mill, and sifted to fine powder. The mixed ingredients then undergo a process so primitive, that one almost regrets to see it in this age of machinery. The powdered clay, being mixed with warm water in large

square leaden troughs, is trampled on with naked feet until thoroughly kneaded into a stiff adhesive clay. The kneading of the dough for sea-biscuits at Deptford, which was formerly done by men's fists and elbows, is now much better effected by machinery; and we might suppose that a similar result would follow the application of machinery in the present case; but it appears that a machine, formerly employed at these works for this purpose, failed to produce the required effect, and the old method was again resumed.

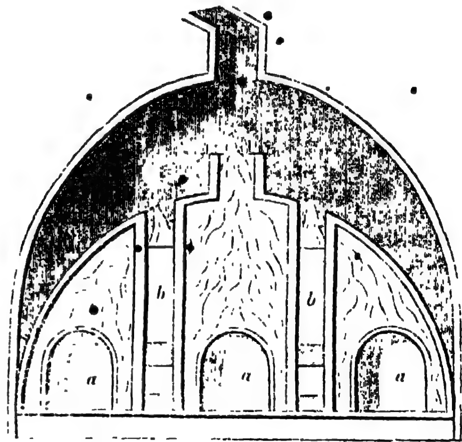
The services of the 'pot-maker' are now called for. The melting-pots for flint-glass are not moulded, but are built up piecemeal, each piece being rolled into a cylindrical form, and laid in a curve on preceding rolls. If we could imagine a boy's grotto to be built of these clay rolls instead of oyster-shells, we might form an idea of the potter's operations, with this important addition, that every roll of clay is so thoroughly pressed and squeezed as to expel all the air from between the rolls, and to form a uniform and thick wall or crust. The manipulations of the potter are aided by a few simple tools; and, keeping four in progress at once, working a little on each in turn, he completes the four in six days. Few persons, probably, on hearing of a 'melting-pot,' would imagine the weight and bulk of those here alluded to. The weight of clay required for one pot is nearly one thousand pounds; and the dimensions of the finished vessel are about three feet in height, two and three-quarters in diameter, and from two to three inches thick. The shape is nearly cylindrical, with a hemispherical top and a flat base, and there is only one opening, about eight or ten inches in diameter, at the upper part of one side.



The longer these pots can be left before they are used, the better; consequently it is important to keep a considerable number on hand. We were struck with the singular appearance of a large dark room, the floor of which was studded with nearly a hundred of these dome-shaped vessels. A little stretch of imagination would have transformed the assemblage into Cassim Baba's oil-jars, and have peopled them with forty (or twice forty) thieves; but the damp odour of clay kept the thoughts from wandering from Blackfriars to Bagdad. The pots are left in this room for several months. The evaporation from the damp clay is considerable, and is allowed to go on very gradually, in order to ensure an equable state throughout the thickness of the pot. When the drying is effected, the pots are taken as wanted to an adjoining room, kept at a higher temperature, and then, a door being opened into the glass-house (of which more presently), each pot is lowered by a crane, and placed in the 'pot-arch.' This arch is a small furnace capable of containing two or three pots; and the pots are there exposed for five days to a very intense heat.

The ingredients are prepared; the melting-pots are made and hardened; and it is now time to visit the 'glass-house' itself—the part of the building to which all the others are subsidiary, and to which the eye of an artist might be directed for some striking effects of light and shade. Imagine a large room, fifty or sixty feet square, with an earthen floor, bounded by brick walls, lofty and dimly lighted, and covered by an iron roof, the middle of which is probably fifty feet from the ground. This is the shell or crust, the kernel of which is the melting-furnace. In the middle of the room we see four pillars, twelve or fourteen feet high, supporting the four corners of a great chimney, which passes through the middle of the roof, and rises to a height of about eighty feet. This chimney is quadrangular, tapering upwards; and a clear passage is left beneath it between the pillars. Built on the level of the ground, at two opposite sides of this chimney, are two furnaces, the smoke from each of which ascends by a bent flue into the great chimney. Such are the objects which first meet the eye through the dusky gloom of the place.

As the two furnaces closely resemble each other, we will, for convenience of description, speak as if there were but one. The furnace is a circular dome, about fifteen feet in diameter and the same in height; and its internal construction may be understood by supposing two basins, one shallow and the other deep, to be inverted and placed one on another, the shallower



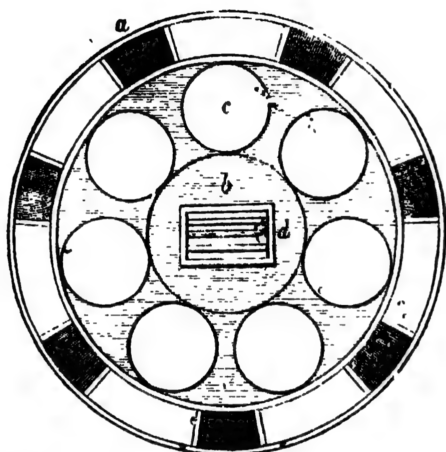
[Section of Melting-Pan a the pots; b, flues.]

one underneath. The inner basin encloses a space containing the pots, the fuel, and the flame and smoke arising therefrom: this flame and smoke reverberate from the vaulted roof, and pass up through flues into the cavity between the two basins, whence the smoke passes, by a bent pipe, into the chimney. All is constructed of brick, and lined with clay capable of resisting the fiercest heat.

The fuel for this furnace is laid on an iron grating in the middle, in connection with which, and beneath the glass-house, is a series of passages running in various directions to the extent of some hundred feet, and intended to furnish the channels for a powerful draught, which, passing upwards through the grating, keeps the fuel in an intensely ignited state. The roof of the inner dome of the furnace is about five or six feet from the ground; and the flame and heated air, reverberating from this roof, maintain a very high temperature within the internal area.

Formerly, the fuel employed used to be coal, but it is now found that in London many advantages result from employing oven-burned coke instead. In a distinct part of the building two coking-ovens have been

erected, for the purpose of preparing the coke on the premises. Into these ovens, which are nearly circular and very shallow, is put small coal, such as is brought from the pit-mouths in Northumberland; and after twenty-four hours' burning or roasting, during which the inflammable matters are driven off, the fuel is drawn out in the form of coke. Twenty-one tons of coal per week are, on an average, required for the glass-house; and this is converted into about fifteen tons of coke in the coking-oven, before being conveyed to the melting-furnace.



[Ground-Plan of Melting-Furnace. a a, flues; b, seague or ground on which the pots, c, are placed; d, grate-bars.]

The melting-pots being of large dimensions, openings, or arches, of sufficient size are left in the sides of the furnace, to allow of the pots being introduced; after which the openings are bricked up. A pot, when once introduced into the furnace, is seldom removed until worn out; but as the average duration of a pot is not more than two or three months, these removals frequently occur. The withdrawal of an old pot and replacing it with a new one is called 'setting a pot,' and constitutes the most arduous and indeed fearful operation of the glass-house, and the one to which the men are wont to refer as proof of their power of heat-endurance. It frequently happens that the old pot breaks, and the pieces, becoming partially vitrified, adhere to the bottom of the furnace: in such case the men stand in front of the fiercely heated openings, and dig up and remove the broken fragments of pot by means of crow-bars and other instruments. While the removal of the old pot is in progress, the new one is kept at a white heat in the 'pot-arch,' a pot-furnace within a few yards of the melting-furnace; and when the transference is to take place, the door of the arch is opened, a low iron carriage is wheeled in and tilted so as to lift up and draw out the pot, and the latter, at a glowing white heat, is wheeled to the furnace, and there deposited in its proper place. When the adjustment is properly made, the opening is immediately bricked up. The temperature to which the men are exposed in this operation (which sometimes takes several hours) may be imperfectly imagined when we remember that the other pots in the furnace may at that time be at a perfectly white heat.

In some kinds of glass manufacture, open melting-pots are used, whereby the fusion of the ingredients is effected in a shorter time. But flint-glass is liable to be injured by the carbonaceous and gaseous matters arising from the fuel, and therefore the pots are covered in. Each pot is so placed in the furnace, that the mouth shall be directed outwards; and this projecting mouth is so bricked and clayed round as to prevent the escape of flame. By this arrangement, every part of the pot, except the mouth, is surrounded by a fierce heat; and although, on looking through this orifice from without, a fiery whiteness is seen, yet this results from the interior of the pot, and not from the interior of the furnace itself, the latter being entirely shielded from view.

Such is the melting-furnace, provided in this way with seven pots; and we now follow the routine of processes connected with the melting.

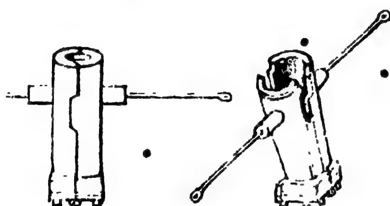
The management of a glass-house, in respect to *time*, is somewhat curious and worthy of note. The filling and emptying of a melting-pot are in general so managed as to occupy one week. On Friday morning, the necessary arrangements for filling commence. The mixed ingredients are brought to the furnace in wooden vessels, and then thrown into the pots by means of shovels, through the openings before alluded to. About four hundredweight is put into each pot; the mouth is closed; the fire kept burning strongly; and the ingredients allowed to sink and melt. Three or four hours afterwards, the hole is again opened, another equal supply thrown in, and another equal space of time allowed to elapse. This is repeated four times, until each pot contain its full quota of about sixteen hundredweight. When all the pots are filled, every orifice is stopped up, the fuel is urged to vivid combustion by increased draught from beneath, and the ingredients remain throughout Saturday and Sunday exposed to an intense heat. At stated intervals a small opening is made, and a little of the 'metal' (as the glass is technically termed) is withdrawn to test its progress. In some glass-works, a considerable quantity of scum rises to the surface of the glass while melting; but there is not much in a flint-glass furnace, on account of the purity of the materials, and this little is removed by skimming. We may here observe, that without any wish on the part of the proprietor to deviate from usual customs, a glass-house furnace must necessarily be kept heated on Sundays as well as other days; but the week is so apportioned as to leave as little as possible to be done on Sundays; nothing, indeed, but to watch the furnace: each man having three Sundays out of four at liberty.

On Monday morning all is ready for the glass workers; the pots are full of 'metal,' looking like liquid fire, and a large party of workmen assemble round the furnace. The mouths are opened, so as to afford access to the melted glass; and smaller holes are opened also, at which the working-tools are heated.

Flint-glass ware, such as drinking-glasses, cruets, decanters, lustres, lamp-shades, phials, &c., are made partly by blowing, partly by manual working, and, in a smaller degree, by moulding or casting, in a way which we will endeavour to describe. We first saw some four-sided perfumery bottles made. A man took a hollow iron tube, about five feet long and half an inch in diameter, and, dipping one end into a pot of melted glass, collected a small quantity at the extremity. The glass appeared like a projecting lump of red-hot iron, and, from its consistence (between that of treacle and of putty), was just able to be retained on the tube. He then rolled the glass on a flat plate of iron, thereby giving it a cylindrical form, and pinched a part of it, by means of a small instrument, to form the neck of the bottle. He next inserted the end of the tube into a small brass mould lying on the ground, shut up the two parts of which the mould consisted, and blew through the tube. This double operation produces a curious effect; for while the air from the lungs, passing through the tube, makes the mass of glass hollow, the mould at the same time imparts to it the external form required. The mould being opened, the glass—now in the form of a bottle—was withdrawn,

still adhering to the end of the rod, and was detached by a slight touch with a piece of cold iron. All this was done in about half a minute; and during the latter part of the process, another workman was gathering and rolling a similar portion of glass, so that one mould served for both. As the bottles were severed from the tube, they were taken up on the end of a heated rod by a third workman, who re-heated them (for by this time they were below red-heat), and by means of a few simple tools finished the necks and mouths as fast as the other two could make the bottles. The lower of the two following cuts represents one form of mould used by the glass-worker.





A far more skilful operation was the production of a claret-jug, since no part whatever of this vessel was moulded. The workman, with a heavier tube than the one before alluded to, gathered a considerable quantity of metal; whirled it twice or thrice round his head, to elongate the mass, rolled it on a flat iron



plate; to give it a regular shape; and blew through the tube from the other end, to make the glass hollow. The rolling and blowing having been repeated two or



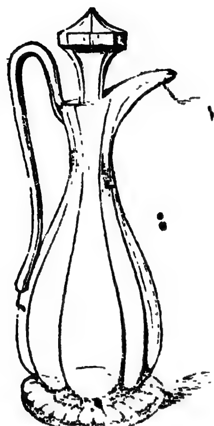
three times, another workman received it, and sat down in a chair having two flat parallel arms sloping downwards. Then, resting the tube on these arms, he rolled it backwards and forwards, to keep the glass from bending; and a boy, stooping down at the other end, blew through the tube, whereby the mass of glass was maintained hollow. By the aid of an elastic instrument, shaped nearly like sugar-tongs, the workman brought the mass into form, rolling the tube continually, and heating the glass frequently to preserve the



proper consistence. Another workman, called the 'footer,' then brought a little melted glass on the end of a rod, and applied it to the end of the blown glass, to which it instantly adhered. This was soon shaped into a foot; and the whole was transferred from the tube to a rod called the 'punty,' the latter being made to adhere to the foot of the vessel by a little melted glass, and the tube being detached by a touch with a piece of cold iron at its junction with the glass. The glass thus transferred, the making of the upper part of the vessel proceeded. With the aid of scissors, a piece of glowing glass was cut off, so as to allow of a depression for the lip of the jug, and the edge was bent and curved with a dexterity altogether beyond the scope of description. Sometimes one prong, sometimes both prongs of the tongs were inserted in the mouth of the jug, and the internal cavity, as well as the external surface of the jug, were gradually modelled into shape. An attendant workman next brought a smaller mass of melted glass on the end of another rod, which was attached to the vessel, and curved in the form of a handle by a few delicate manœuvres.

The rapidity with which these operations are effected almost baffles the eye of a spectator. The glass is in such a medium state between a solid and a liquid, that while, on the one hand, it would drop from the tube if

not kept rotatory, it is, on the other, capable of being pulled, twisted, stretched, cut, pressed, and worked in various ways. No mould, stamp, or press was employed in the manufacture of this jug, the whole being effected by the manual dexterity and accurate eye of the workman, aided by a few of the most simple tools. Great, indeed, is the surprise excited at seeing such an elegantly-formed vessel manufactured in such a way in the space of ten or twelve minutes: we here allude to the making only, for in the annexed figure the jug is represented in its finished or 'cut' state. The eye

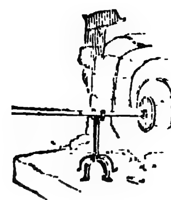


of the workman detects when the glass is becoming too cold for working, and he holds it for a few seconds at the 'working hole,'—one of the pot-mouths. After every such re-heating, he sits down again, and rolls the tube in the 'chair-arms,' with the glass projecting over near his right hand.

In all vessels provided with a leg and foot, such as wine-glasses, the leg is formed of one dip of glass, and the foot of another, each in turn being attached to the body of the vessel, and worked into shape. In such articles as salvers, dishes, or shallow vessels generally, the workman, after having his mass of glass hollowed by blowing, transfers it from the working tube to the punty: the hole left where the tube had been attached he gradually enlarges, by whirling, modelling, re-heating, and bending, until the glass expands to the wide flat concave form required. In any vessel to be provided with a handle, a lump of glass—if we call it *glass putty*, perhaps the reader will form a better idea of its consistence—is attached at one spot, drawn out, dexterously curved, and attached also at another spot, an operation nearly as surprising as any in the manufacture, since the workman has no guide but the accuracy of his eye in suddenly forming the handle. In such a production as a lamp or chandelier shade, the mass requires frequent re-heating, on account of the large size attained; and whenever the mass of glass has to be thus repeatedly heated, a constant rotation is given to the tube or rod, to preserve a circular form in the article attached to it. While re-heating at the furnace, this rotation is maintained as much as on the 'chair-arms,' a resting-groove being placed in front of the furnace-mouth for the support of the rod while rotating.

The ductility of the melted glass, or that property by which it is capable of being drawn out, is perhaps nowhere so strikingly shown as in the making of glass-tubes, such as are employed for thermometers, barometers, &c. A workman collects a quantity of glass on the end of a tube, rolls it on an iron plate into a cylindrical form, blows into it to form a cavity within, and holds it towards a second workman, who attaches





a heated rod to the other end of the mass, to which it instantly adheres. The two men, standing opposite each other, then walk backwards, the glass elongating as they proceed, until a tube forty or fifty feet long is produced. This tube hangs down as it is formed, and rests on a ladder or frame laid along the floor of the glass-house; and by the time all the mass of glass is thus drawn out, a tube almost perfectly equable in thickness is formed, with a bore or perforation running through its whole length. The preservation of this bore is one of the most singular parts of the process, the elongated tube acquiring a bore of the same *form* as is given to the cavity in the mass of glass, however much reduced in size. In most thermometers the mercurial column is seen to be flattened, so as to be scarcely visible when viewed laterally. This flattened shape represents the form of the bore of the tube; and in order to produce it, the mass of glass, after having been blown hollow, is gently pressed on two opposite sides, whereby a flattening of the internal cavity is produced while the external surface is again made cylindrical by re-dipping into the melting-pot. This form, *i.e.* flat within and circular without, is retained throughout the subsequent elongation, notwithstanding the vast diminution in the sectional area of the tube. Most kinds of glass-tubing, for meteorological, optical, or other purposes, are produced in a manner nearly analogous to that here described; the length of tubing being afterwards cut into convenient portions. Most persons have probably seen or heard of "Glass-working exhibitions," in which trinkets and toys are made in a very delicate and neat manner out of melted or softened glass; although the glass is, in these cases, melted at a blowpipe instead of a furnace, yet the principle by which the exhibitor is enabled to proceed is the same as that developed in tube-making, and calls for our assent to the remark that 'flint-glass possesses, at the working heat, a degree of tenacity and ductility not to be found in any other substance in nature.'

Four thousand pounds weight of glass is weekly wrought into these various articles; and we must now quit the melting-furnace, and watch the manufactured articles in the process of 'annealing.' The object of this process is to render the glass less brittle, and less liable to fracture from sudden alternations of temperature. If a glass vessel, made at the high temperature necessary for working, were allowed at once to cool in the open air, the surfaces of the vessel would cool and contract more rapidly than the interior substance, whereby the glass would be in an unequable state of elasticity, and therefore liable to fracture. We have seen a piece of thick glass-tube, which had been plunged while hot into cold water: the interior surface was cracked to such a degree as to appear like a surface covered with crystals. There are

philosophical toys, known as 'Bologna phials' and 'Prince Rupert's Drops,' which are similarly treated, by being plunged into cold water while yet hot: the exterior becomes cooled and fixed before the interior has time to contract in a corresponding degree; the consequence of which is, that this unusual state of tension causes the whole to be shattered to atoms when the smallest incision or scratch is made on the surface. To avoid such an inconvenience as this, glass-ware is suffered to cool by very slow degrees.

This slow cooling takes place in an annealing-oven called a 'leer;' a name for which it would not perhaps be easy to furnish a reason, unless it be an instance of the Anglicised foreign terms used in a glass-house, and of which the 'punty,' or working rod, and the 'marver,' or iron plate, furnish examples—these two terms being derived from the French 'pontil' and 'marbre.' The arched entrance to the 'leer' is seen at one side of the glass-house, closed by iron doors; the oven having the form of a long flat arch, sixty feet in length or depth, five feet wide, and from one to two in height. Adjoining the door of the oven on each side is a furnace, by which a high temperature is maintained; but as there is no other heating-power, the oven experiences less and less of the heat as the distance from the mouth is greater, until, at the remote extremity, the temperature is scarcely higher than that of the surrounding atmosphere. Along the floor of the oven is a miniature railway upon which two rows of iron trays, called 'leer-pans,' travel.

Such being the arrangement, and all the operations being in full play, the annealing proceeds as follows:—As soon as a glass vessel is formed, a boy carries it, either on a wooden shovel or by means of a pronged fork, to the 'leer,' and places it in one of the pans. This continues until one pan is full; and the pan being then wheeled onward by means of a windlass, another is laid in its place, similarly filled, and similarly wheeled on; and so on, one pan after another. By this means, the pan first filled is drawn farther and farther from the heat, whereby the annealing or gradual cooling is effected. The time required for annealing varies from twelve to sixty hours according to the thickness of glass in the article manufactured; and matters are so arranged as to have similar articles in the oven at one time, in order that the same routine may be available for all; or else to make the two rows of pans travel with different speed. There are some annealing-ovens in which the process is differently conducted: they are much shorter, and more equably heated in the different parts; and after being filled with manufactured articles, the mouth is closed, and the fire allowed gradually to go out, whereby the whole oven loses its heat by slow degrees. The form first described is, however, found most advantageous in the flint-glass manufacture.

The order of processes now requires us to visit a room at the remote end of the annealing-oven. The key of this room is in the possession of an excise-officer, under whose supervision all the arrangements of the room are conducted. Were this the place, we might remark on the evils resulting to manufactures from the mode in which excise duties are collected on the articles manufactured; but we must take the case simply as we find it. The annealed vessels are removed from the pans, examined to see that they are perfect, and weighed; a duty being payable on such articles only as leave the annealing-oven in a perfect state. This restriction is necessary, for the vessels are frequently spoiled in the oven, either by being imperfectly annealed, or by being overheated near the furnace.

Many articles of flint-glass ware are deemed finished when they leave the annealing-oven, and are accordingly warehoused; but the brilliant display of a side-board or dinner-table owes much of its attraction to the cut, or, if the term be allowable, sculptured forms of the glass vessels. This cutting is effected after the vessels are annealed, in a distinct part of the building, and by a process wholly different from those hitherto described.

The glass-cutting room has a singular appearance. A double work-bench extends along the room, divided into several compartments for an equal number of men. In front of each workman is a thin wheel revolving on a horizontal axis; and above some of the wheels are vessels containing sand and water, which drop through a small orifice in the bottom, and fall on the edge of the wheel. All the wheels are set in motion by steam-power, and each workman has the means of unfixing his wheel, and putting on another of a different kind. These wheels are of various sizes, and made of various substances, such as cast-iron, wrought-iron, Yorkshire stone, and willow-wood. The edge of the wheel is that part by which the grinding is effected; and different shapes and thicknesses are given to these edges, in order to produce different results.



The workman takes the glass, decanter, or other manufactured article, and holds it against the edge of the revolving wheel, by which the substance of the glass is ground down, and flat or curved surfaces produced. The vessel is held in various positions, according to the pattern required; accuracy of eye and steadiness of hand being indispensable in the workman. The iron wheels, with sand and water, are used for grinding away the substance of the glass; the stone wheel, with clean water, for smoothing the scratched surfaces; and the wooden wheel, with rotten-stone and putty-powder, for polishing.

In a separate room the stoppers or stopples for bottles are ground, and the necks of small bottles made truly circular by attaching them to a kind of lathe, and applying small tools to the surface while revolving. The value of well-stoppled bottles to the chemist renders this operation one of nicety and importance.

In addition to the cut surfaces of glass vessels, whereby such a lustrous play of colours is produced, the more costly articles are engraved, that is, devices are cut on the surface more delicate than can be produced by the cutting-wheel. A separate apartment is devoted to the operations of the glass-engraver, who is seated at a bench before a small lathe; and to this lathe he attaches one of a series of little metallic disks or wheels, generally made of copper, and varying from an eighth of an inch to two inches in diameter. The edge of the rotating disk he touches with a little emery moistened in oil, and then holds the glass vessel against the edge of the disk, by which very minute scratches or indentations are produced. By dexterous changes in the position of the glass, and in the form and size of the disks employed, he combines these indentations so as to produce beautiful intaglios or sunken pictures.



This is strictly a branch of the Fine Arts, and as such places the engraver on a different level from the other workmen. Taste, both natural and cultivated, a knowledge of the external forms of natural objects, and a delicacy of eye and hand, are all required in this operation; and we viewed with pleasure the labours of an intelligent workman engaged therein. A laudable attempt is now being made in England to diffuse among workmen a more extensive knowledge of the Arts of Design than has yet been possessed by them; and such operations as those of glass cutting and engraving afford an ample field for the display of this kind of knowledge. We believe that the proprietor of this establishment is himself one of the council in the new government School of Design.

The most profitable and important articles of flint-glass are such as are largely employed and have a current sale; but the costly and delicate articles occasionally produced call for great skill and inventive ingenuity. There is a kind of cut-glass in which the projecting parts of the pattern are coloured and the sunken parts colourless. These are produced in a remarkable way; for after the working-tube has collected nearly sufficient colourless glass from one pot, the mass is dipped into another containing glass which is coloured by the addition of certain metallic oxides, by which an external coating of coloured glass is given to the mass. When the blowing and modelling are completed, this exterior coating is, in the finishing process of cutting, ground away in some parts and left remaining in others, thus producing a singularly delicate effect.

Another kind of ornamental manufacture is the 'crystallo-ceramie,' or glass-incrustation, patented by Mr. Pellatt some years ago, and consisting of an opaque substance imbedded in a mass of colourless glass. A medallion or bas-relief, representing any device whatever, is moulded in a peculiar kind of clay capable of resisting the heat of melted glass; and the medallion is enclosed between two pieces of soft glass, or else is introduced into a cavity in the glass, from whence the air is afterwards extracted. The introduction of the medallion into the glass is the main difficulty in this process, and requires much skill and ingenuity, in order that no air-bubbles may exist between the two substances. When finished, and the external surface of the glass cut to the required form, the appearance of the imbedded medallion is singularly chaste and elegant; for the white clay, seen within the clear and highly refractive glass, presents an appearance nearly resembling that of unburnished silver. This branch of art, *i.e.* the incrustation of clay devices, was invented by a Bohemian, about sixty years ago; at a later period some French manufacturers encrusted medallions of Napoleon in this way, and sold them at an enormous price; but since the introduction of the art into England, under an improved form, a wide extension has been given to its applicability. Decanters, goblets, wine-glasses, lamps, girandoles, chimney-ornaments, plates, door-handles, and other articles formed of flint-glass, have been ornamented in this way; the incrustations being arms, ciphers, crests, inscriptions, portraits, small busts, caryatides, or indeed any small objects capable of being modelled or moulded in clay. The incrustation may be painted with metallic colours, which will remain uninjured by the heat required in the process.

There is a mode of incrusting opaque ornaments or devices on the surface, instead of within the substance, of the glass. This is effected by adjusting the ornament in a brass mould, and blowing and moulding the glass to it; the details requiring considerable skill, but the principle being nearly the same as in the other process.

The astronomer and the optician obtain from the flint-glass manufacturer the materials from which their lenses are made. It has been ascertained that there is a certain state of the fused glass which is best calculated for optical purposes; and when the mass has attained this state, about seven pounds weight is taken up in a conical ladle and blown into the form of a hollow cylinder. This cylinder is cut open, and flattened into a sheet twenty inches long by fourteen wide, and from two to three eighths of an inch in thickness. In this form it passes into the hands of the optician, who cuts and grinds it to the shapes required for optical purposes. The masses of glass for large telescope lenses require a somewhat different process, and extraordinary care in the choice, preparation, mixing, and melting of the ingredients: indeed, the production of good glass for this purpose is one of the most uncertain things in the whole glass-manufacture.

We terminate our visit by alluding to the elegant show-rooms or galleries, in which the finished materials, of all the various kinds above alluded to, constitute a brilliant display.



[The Holy Family.—Sir Joshua Reynolds.]

GRATUITOUS EXHIBITIONS OF PICTURES.

THE NATIONAL GALLERY.

From the revival of painting by Giovanni Cimabue, in the latter half of the thirteenth century, to its second declension under Carlo Maratti, in the commencement of the eighteenth, no subject has so frequently exercised the painter's skill as that of the Holy Family. It has been represented with all the sublimity of art by Raffaelle; with tenderness and exquisite sweetness by Carlo Dolci; with familiarity by Rembrandt; and in our own day by Sir Joshua Reynolds, in the picture before us, with a mixture of the solemnity of the earlier schools and the domesticity of modern art.

The chief beauty of this performance is the richness of its colouring and the excellent management of the lights and darks. In order to make the drapery of the Virgin combine with the colouring of the figure of the Infant Saviour, and with the flesh of Mary herself, that drapery is painted of a light hue, and possesses a very small share of actual red, although its general effect is to give a notion of that colour. In like manner the figure of Joseph is so managed that incidental shadows, that is, shadows thrown into the picture from substances not indicated within its limits, are seen upon the hands and the leg, which cause them to form masses in conjunction with the dark drapery he wears and the background of the composition; thus the attention is at once and inevitably drawn to the chief portion of the picture, the Infant Jesus, as well by the actual attraction of the light as by the contrast of the dark. It is this management of the masses of light and dark, or chiaro-'scuro, and the beauty of colouring, which have rendered the works of Reynolds so famous with his own countrymen, and which, though reluctantly, have wrung from foreigners expressions of their approbation.

In a subject such as the Holy Family, the artist has to contend against two opposite difficulties; he must give as much elevation of expression to his figures as will convey the feeling of supernatural excellence, yet he must not divest his work of those social attributes which render it understandable by the general observer.

In the glories of the Transfiguration, or the sublimity of the Assumption, all human feelings, all earthly con-

siderations are absorbed in the awful manifestations of the power of the Almighty. In the nativity and in the infancy of the Redeemer we are prepared to behold him as bearing the investment of humanity, and not asserting the divine majesty of the Godhead. In the former class, therefore, painters have properly endeavoured to excite the loftier emotions of the soul; in the latter, they have, with equal justice, appealed to the tenderest sympathies of our nature. In the Holy Family of Reynolds we must look for purity and simplicity, and in the person of the Virgin Mother that expression will be found; and though the Infant Saviour accords in bodily shape with his apparent age, still the face gives evidence of an intellect beyond the reach of mortality. With all this judicious management, the picture will be beheld as one of those works into which the artist has endeavoured to infuse a spirit of domestic feeling rather than a sensation of reverential distance. In short, the scene is presented to us as if we could form part of the group, instead of a transaction taking place in a situation into which our frail humanity can by no possibility intrude.

We may conveniently take occasion here to correct an error which was inadvertently fallen into in the notice of the picture of St. John by Murillo.* It was there said, "Though it should seem that John was about twenty-five or twenty-six years of age when he was called to follow Christ, painters have delighted to imagine him as the early associate of his Master." This idea, which would have been inaccurate with regard to the Evangelist, may have been correct as refers to the Baptist, who was the son of Zacharias and Elisabeth, and who from his conception had been miraculously appointed (see *Luke*, chap. i.) to preach the advent and kingdom of the Messiah; whilst the Apostle and Evangelist, the youngest, the gentlest, and most affectionate of the disciples of Jesus, was destined but to tread in the steps of his divine Master.

The engraving at the head of the article is by Mr. Jackson, and is a copy of the picture of the Holy Family, painted by Reynolds, for Mr. Macklin's edition of the Bible, and which has been engraved for that work by Sharp, in a very masterly manner. The original was purchased at the sale of Lord Gwydyr's collection, and liberally presented to the public, for the National Gallery, by the governors of the British Institution.

Before proceeding to comment on the exalted rank held by Reynolds, it will be sufficient to state of his history that he was one of eleven children of a clergyman, who was head master of Plympton grammar-school, in Devonshire, and was born at that place, on the 16th of July, 1723. His early predilection for art induced his father to place him under the tuition of Hudson, the portrait painter, in London. He made rapid progress in his studies, visited Rome, and, on his return to England, in 1752, almost immediately obtained extensive employment. In 1768, on the foundation of the Royal Academy, he was chosen its first president, a station he held, with but a short intermission, for the space of twenty-two years. He died in London, on the 23rd of February, 1792, and, after lying in state at the Academy, was buried in the vaults of St. Paul's Cathedral, by the side of Sir Christopher Wren, the constructor of that edifice, and a statue to his memory, executed by Flaxman, has been erected in the church. Thus the most eminent architect and the most gifted sculptor that England has produced have appropriately furnished a noble resting-place for the remains and a lasting memorial to the honour of the great founder of her school of painting.

Before the appearance of Sir Joshua Reynolds, excepting Hogarth in his peculiar and unapproached style, and Wilson in poetic landscape, any the remotest approximation to a native school of art could not be said to exist in England. At one stride this eminent man reached the summit of professional distinction, though it could be only by profound study that he achieved the rank he held amongst the colourists and chiaro-'scurists of Europe. In his career he was so universally sought for as a painter of portraits, that it was not until the latter portion of his life he could devote his attention to historic or poetic composition. Indeed so enthusiastic was the grave Dr. Johnson in favour of this pursuit of his friend, that he seems to have grudged the time given by Reynolds to the few works in these classes which he has left us. "It is in painting," he says, "as in life, what is greatest is not always best. I should grieve to see Reynolds transfer to heroes and to goddesses, to empty splendour and to airy fiction, that art which is now employed in diffusing friendship, in renewing tenderness, in quickening the affections of the absent, and continuing the presence of the dead."

Fortunately, Reynolds did not confine himself to this branch of art, but executed, in the words of Barry, "a few expansive efforts of colouring and chiaro-'scuro, which would do honour to the first names in the records of art." In respect to these qualities the Professor might have referred to the Holy Family, for, although in colour it has in many parts become much deteriorated, still it remains a noble specimen of the mastery which the painter held over those essentials of the art. But even supposing he had never executed any pictures but portraits, we ought not therefore to look upon Reynolds as less endowed with the true principles of painting. It is a mistake, but too general, that the art of portraiture is governed by rules at variance with those of historical composition. In each the aim is to imitate the effect of nature, and it matters not whether the composition, so far as the management of the colour and light and dark is concerned, consists of one figure or of a group of twenty persons. The attraction of the attention to the principal point of one is as essential as to the chief action of the other The harmony and arrangement of both are to be produced by the same means. Dr. Johnson himself would appear, from the passage we have quoted, to have been unaware of this fact, for he alludes to the portraits by Reynolds only as likenesses, and is silent on their merits as pictures. Mr. Burke, on the other hand, seems to have had a just appreciation of the distinction between an expert face-painter and a real artist, for he says that "his portraits remind the spectator of the invention of history and the amenity of landscape;" nor has the eloquent statesman less truly observed of Reynolds, that "he possessed the theory as perfectly as the practice of his art. To be such a painter, he was a profound and penetrating philosopher."

Entertaining a deep reverence for the genius of Sir Joshua Reynolds, we are still quite ready to admit that in his historical works he is more eminent for his colouring than for academic correctness in drawing. His own modesty and candour, indeed, render it scarcely necessary to do more than allude to the fact, for he admits that of all the main principles of art, that was the one to which he had least attended. Yet in his studies at Rome he devoted his time to the magnificence of Michael Angelo and to the divine purity of Raffaelle, and recorded his devotion to the former by writing to Barry at Rome, urging him to study in the Capella Sistina, for that the wonders there were those things which alone rendered the Eternal City more profitable to an artist than any other place in the world, and he sealed that opinion by declaring from his chair, in his farewell address to the students of the

* Ante, page 13.

Royal Academy, that he should desire that the last words which he should pronounce in that place, and from the seat of its president, might be the name of Michael Angelo. Here, too, we may refer to the circumstance so obvious in most of the pictures of Reynolds, the great cracking and separation of the colours that has taken place. This arose from the constant habit in which he indulged, of adopting every experiment in his colouring materials that was suggested to him. An anxious wish to discover the mode adopted by the artists of the Venetian school, and particularly Titian, led Reynolds to try the effect of every vehicle for painting that was proposed, and, as many of these were of a highly volatile nature, we see the sad effect of his experimentalizing in the faded and defaced condition of his works.

We have now only space left for a brief mention of the admirable professional writings of this distinguished artist and accomplished man. The 'Discourses' of Reynolds originated in the custom of his official delivery of the premiums offered by the Academy for successful application by its students. The president thought that mere compliments might grow vapid by repetition. He, therefore, composed these 'Discourses,' which have rendered his name as noted for his powers of criticism, profound thought, and varied literary acquirements, as his painting had previously done for it as an artist. These compositions have been from time to time attributed both to Johnson and to Burke, but at the present day no tolerably well informed unprejudiced person doubts for a moment that they were the genuine productions of Sir Joshua's hand and the true emanations of his brain. There is a slight degree of hastiness discoverable in the style, which has given cause to cavillers to say that the president sometimes contradicts himself. To the candid reader, however, they contain a whole treasury of true maxims, and together form one of the most valuable collections of remarks that has ever been published on art, fully bearing out the eulogy of Sir Thomas Lawrence, who characterised them as "golden precepts, which are now acknowledged as canons of universal taste."

IMPROVEMENT OF TOWNS AND THEIR POPULATION.

The great branches of our national industry, while they are instrumental in producing and diffusing wealth, appear at first sight almost to involve the moral and physical degradation of the numerous masses of our working population who are immediately engaged therein; and although a closer examination will show that this is by no means the case, we shall find that this class is undoubtedly suffering from evils of no common magnitude. The chief palliation of the guilt of neglect and delay in providing a remedy for the existing evils, is to be found in the rapidity with which they sprung forth. They had become of gigantic stature before men were aware of their existence, and then it seemed to be hopeless to contend with them. The changes which have taken place in the state of society in England during the present century were so different from the ordinary circumstances under which great social revolutions take place, that men's attention was not sufficiently directed to inquire into the new wants to which they gave birth. Numbers were drawn to the great seats of manufacturing industry from the surrounding rural districts, and from more distant quarters as the demand for 'hands' became more urgent; rows of cottages were hastily erected for the accommodation of the immigrants, and to provide for the demands of a rapidly increasing population. In twenty or thirty years the population of the towns which became the scene of these changes was doubled, or perhaps trebled; but as for their physical, moral, and intellectual improvement, the mass of human beings thus suddenly congregated on a given spot, were in a state of as much destitution as are some hundreds of labourers employed for a few months on public works, and who are temporarily occupying rude huts erected close to the scene of their labours. One great want, therefore, of the large towns of modern growth is an improved municipal organization directed to such objects of local interest as can be successfully accomplished by local means. No single remedy can be adapted to evils which ramify into so many branches, and though no one can doubt the advantages which have been derived from Sunday-schools, savings'-banks, mechanics' institutes, and reading-rooms, yet the inefficiency of these alone is now forced upon our conviction, and we hope we are not mistaken in assuming that the condition of the labouring population, especially in the large towns, will soon be treated as a *whole*, and that a series of practical measures will be devised for their benefit.

As an instance of the various means by which the great object to be kept in view may be promoted, we regard with much satisfaction the recent introduction of a measure to enforce a better system of drainage in large towns. It is a step in the right direction, and is avowedly taken with the object of directing attention to the condition of the poorer classes of the town population, so that it will naturally be followed by other plans of improvement, such as public walks, cemeteries, &c., &c. A glance at one branch of the evils which the proposed measure is designed to remedy, will at once prove its value and necessity. Our facts are taken from the Report of a Statistical Committee of the Leeds Town Council upon the condition of that town and its inhabitants, which contains information respecting the condition of the surface and subways of the streets; and we are assured that the state of things therein described will find a parallel in every one of our large towns of similar size. In Leeds there are extensive and populous districts without any sewers or means of drainage, and filth of every kind accumulates in masses and lodges in hollows on the surface until dissipated by the wind and sun. There were, in 1839, three streets in Leeds containing one hundred dwellings, and a population of 452 persons, for whose accommodation there were but two out-offices, neither of which was fit for use; and other parts of the town were in scarcely a better condition. Some streets resemble a field which has been cut up by loaded vehicles in wet weather, and the inhabitants vainly attempt to repair them with ashes or other refuse. In whole rows of cellar-dwellings the walls never cease to drip with moisture, and in some habitations of this class the inhabitants have been awakened in the night and literally found their beds floating. In other cases, where there are sewers, the want of arrangement amongst proprietors renders them incomplete and imperfect. They become engorged, and pour a flood of fetid matter into cellars and dwelling-rooms. Malaria then affects the inhabitants, and its influence is shown by the accelerated fatality of disease in the district. In a case of this kind at Leeds, it appeared that while in other parts of the town there were two deaths to three births, the proportion in the flooded district was three deaths to two births. Dr. Southwood Smith has stated of the metropolis, that by taking a map of the sewers, and tracing the course of fever, it would be found to run in a directly inverse ratio to the course of the sewers: where there were sewers, there no fever would be found.

There are many other evils in the physical state of towns besides those arising from deficient drainage,

but the reader may be spared for the present the painful facts which show that large portions of our industrious fellow-countrymen are habitually living amidst circumstances which degrade and brutalise the character, and all but extinguish the moral sense. It is more pleasing to notice the fact that attention is awakened to these evils, and the conviction is gaining ground that they must be removed ere the work of moral, religious, and intellectual improvement can commence upon a just foundation. How, for example, is it possible to give to individuals already morally degraded a sense or a taste for domestic comforts while they continue destitute of a home worthy of the name? or can it be surprising that the damp and cheerless cellar, without a single domestic convenience, should exercise a less powerful influence and attraction than the gin-shop or the beer-shop? Those who have had opportunities of learning the condition of the working classes have not failed to notice that when the mechanic removes from a two-and-sixpenny cottage to a three-and-sixpenny cottage, a corresponding moral improvement has been visible in his conduct and deportment; and the man who falls from a state of comfort into the hopeless degradation of a miserable cellar-dwelling, sinks too often into a lower moral state as his physical condition becomes depressed and unfavourable. Mr. Ashworth, the great manufacturer of Bolton, is so strongly impressed with the influence of comfortable habitations for the working classes upon their moral character, that every successive range of cottages erected by him for the last twenty years has been rendered more expensive and has been more completely furnished with conveniences than the preceding lot, and the best cottages are at once the most expensive and the most sought after by his own work-people. In cottages of this class new desires are experienced; an effort is made to purchase appropriate furniture, to obtain which orderly and sober habits are necessary; and cottages of this description encourage such habits, for here the artizan can spend his evenings in the enjoyment of domestic comforts, and need not resort for excitement or occupation to the gin-shop.

The legislative measure to which we have alluded, is an attempt to give the poor a greater share of public comfort and convenience. It will protect them from the cupidity of the owners of small tenements; for in many instances they, and not the tenants, are to blame for the scandalous violations of comfort and decency which are inevitable without this protection. While the inquiry at Leeds was proceeding, a deputation of women waited upon the Committee to beg an immediate remedy for a nuisance in their neighbourhood; but owing to the indefinite meaning of the term "nuisance" in point of law, this object could not be accomplished without great trouble and expense; and these impediments have in fact been the protection of many a nuisance, while a special general measure like the one in progress will go to the source of the evil. It may also be regarded as an encouragement to owners of tenements who are disposed to consult the comfort and convenience of their tenants. At Leeds, "in many instances, when the property of a street is in many hands, one half of them or more originally completed their respective parts, as regards paving and sewering, but the cupidity, obstinacy, or poverty, or all combined, of other owners, or even of a single one, has prevented the improvement of the whole." Lastly, the proposed measure will be one of justice to the small rate-payers. In the Leeds Report it is stated that "in a great measure the cottages are rated as a part and for the benefit of the whole community, but are mulcted of that proportion which ought to carry clean pavement to their own doors."

What England has done: What it has yet to do.—The earthworks on most of the great lines of railway in England are very extensive, in many cases averaging from 100,000 to 150,000 cubic yards per mile. On the North Midland railway from Derby to Leeds, a distance of 72½ miles, about 9,500,000 yards of earth were moved, being more than 130,000 cubic yards per mile. During part of the time that the works were in progress, from 9000 to 10,000 men, assisted by eighteen steam-engines, were employed, besides great numbers of horses. Temporary stables were erected, and the agriculturists in the vicinity obtained large supplies of manure, an advantage from which they had previously been excluded on account of their distance from towns. The quantity of earth and stone removed in forming the London and Birmingham line was about 16,000,000 cubic yards, which, if formed into a belt three feet wide and one high, would more than encompass the earth at the equator. Looking at what has been effected in this country by the labour, ingenuity, and industry of man, we are reminded of a striking passage in one of the vivid rhapsodies of Mr. Carlyle: "Who (he asks) shall say what work and works this England has yet to do? For what purpose this land of Britain was created, set like a jewel in the encircling blue of ocean; and this tribe of Saxons was sent travelling hitherward? No man can say: it was for a work, and for works, incapable of announcement in words. Thou seest them there; part of them stand done, and visible to the eye; even these thou canst not *name*: how much less the others still matter of prophecy only! They live and labour there, these twenty million Saxon men; they have been borne into this mystery of life out of the darkness of Past Time:—how changed now since the first Father and first Mother of them set forth, quitting the tribe of *Theuth*, with passionate fare-well, under questionable auspices; on scanty bullock-cart, if they had even bullocks and a cart, with axe and hunting-spear, to subdue a portion of our common Planet! This Nation now has cities and seed-fields, has spring-vans, dray-wagons, Long-acre carriages, nay, railway trains; has coined money, exchange-bills, laws, books, war-fleets, spinning-jennies, warehouses, and West India Docks: see what it has built and done, what it can and will yet build and do! These umbrageous pleasure-woods, green meadows, shorn stubble-fields, smooth-sweeping roads; these high-domed cities, and what they hold and bear; this mild 'Good-morrow,' which the stranger bids thee, equitable, nay forbearant if need were, judicially calm and law-observing towards thee a stranger,—what work has it not cost? How many brawny arms, generation after generation, sank down wearied; how many noble hearts, toiling while life lasted, and wise heads that wore themselves dim with scanning and discerning, before this waste *White-cliff*, Albion so called, became a British Empire!'

Success and Economy of Early Treatment in Insanity.—The Sixth Report of the Trustees of the Worcester Lunatic Asylum (United States) contains some valuable facts showing the success attending the early treatment of insanity, and demonstrating besides its importance as a matter of economy merely. The twelfth table of the Report shows that "upon the proper and usual basis of computation, the proportion of cures at this hospital in recent cases—that is, in cases of less than one year's duration at the time when received—is 91 per cent.; while the proportion of cures in cases of more than five years' duration has been only 12½ per cent.; and in cases of more than 10 years' duration, only 3½ per cent. Or, to present the same fact in another striking point of view, the proportion of the old cases remaining at the end of this year is about 87½ per cent., while the proportion of recent cases remaining at the same time is only 12½ per cent." Looking at the pecuniary results, the Report observes, that "the expense already incurred for taking care of twenty cases, which from neglect had been suffered to run on until they became incurable, has been more than thirty-two times greater than the expense of the same number for which early and proper provision was made."

Advantages of Commerce.—It is the great advantage of a trading nation, that there are very few in it so dull and heavy, who may not be placed in stations of life which may give them an opportunity of making their fortunes. A well regulated commerce is not, like law, physic, or divinity, to be overstocked with hands; but, on the contrary, flourishes by multitudes, and gives employment to all its professors. Fleets of merchantmen are so many squadrons of floating shops, that vend our wares and manufactures in all the markets of the world, and find out chapmen under both the tropics.—*Spectator*, No. 21.



[The Knight and the Squire.]

CHAUCER'S PORTRAIT GALLERY.

THE KNIGHT.

Although we cannot trace the existence of chivalry backwards to so very remote a period as that referred to in the visions of Piers Plowman,* where we find that David "dubbed knights," yet there is much reason to doubt the truth of the common opinion which ascribes its origin to the eleventh century, and considers that it was then first invented as a great moral antagonist to the deplorable evils of the time; for "a closely attentive as well as philosophical analysis of the history of European society in the middle ages proves this theory, or rather this supposition, to be deceitful. It shows us that chivalry was not, in the eleventh century, an innovation, an institution brought about by a special exigency which it was expressly adapted to meet. It arose much more simply, more naturally, and more silently; it was but the development of material facts long before existing—the spontaneous result of the Germanic manners and the feudal relations. It took its birth in the interior of the feudal mansions, without any set purpose beyond that of declaring, first, the admission of the young man to the rank and occupation of the warrior; secondly, the tie which bound him to his feudal superior—his lord, who conferred upon him the arms of knighthood. . . . . But when once the feudal society had acquired some degree of stability and confidence, the usages, the feelings, the circumstances of every kind which attended the young man's admission among the vassal warriors, came under two influences which soon gave them a fresh direction and impressed them with a novel character. Religion and imagination, poetry and the church, laid hold on chivalry, and used it as a powerful means of attaining the objects they had in view, of meeting the moral wants which it was their business to provide for."* And the result was that character—of all characters, whether of romance or reality, the most popular for many ages—the knight:—that strange incarnation of the most opposite qualities of our nature; whose gentleness in peace was no less remarkable than his ferocity in war; who was as pious in faith as he was not uncommonly irreligious in deed; who held such pure and lofty notions of women in the abstract, that they were to him women no longer, but a species of earthly goddesses, worthy of all reverence, and a life-long self-devotion to their service, yet who at the same time but too often exhibited in his life the grossest sensuality, the most utter disregard of their true welfare or dignity. To such discrepancies between the knight's theory and practices in the matters of religion and love, doubtless there were many exceptions; to that concerning his disposition in peace and war there could be few or none. War was their

* By Robert Langland; the most distinguished poetical work that had appeared before the productions of Gower and Chaucer.

* 'Penny Cyclopædia,' article 'Chivalry,' vol. vii., p. 89.

"being's end and aim." "Take them," says Godwin, "in the chamber of peace, it is impossible to figure to ourselves anything more humane. When occasion called to them to succour the oppressed, and raise the dejected, overwhelmed by some brutal or insulting foe, they appeared like Gods descending from Heaven for the consolation of mankind. But the garb of peace, however gracefully they wore it, they regarded as only an accident of their character. War was their profession, their favourite scene, the sustenance of their life. If it did not offer itself to them at home, they would seek it to the ends of the earth, and sell themselves to any master rather than not find occasion to prove the intrepidity of their temper and the force of their arm. When they entered the field of battle, they regarded the business of war not as a matter of dire and tremendous necessity, but as their selected pleasure. Their hearts were then particularly alive, and all their pulses beat with joy."* Froissart furnishes a happy illustration to this passage, in his account of the battle of Poitiers. "The prince of Wales (the Black Prince), who was as courageous and *cruel as a lion, took great pleasure this day in fighting and chasing his enemies;*" yet, when the battle was over, and the French king made prisoner, the same prince waited upon his illustrious captive at supper, with a tenderness and delicacy of respect, that it is impossible to read of unmoved. The period of Edward III. and of his gallant son is indeed the period of the highest and most palmy state of chivalry; it is also the period of Chaucer, who, in "the Knight" and "the Squire," has shown us the two great and clearly distinguishable phases of the knightly character. In the one, we see the young, loving, enthusiastic, poetical, and accomplished aspirant for military honours; in the other, the aged veteran warrior, with whom the stern realities of life have sobered down much of its early romance: the first ("the Squire") will form the subject of our next paper; the last we now present to our readers.

"*A Knight* there was, and that a worthy man,
That from the timé that he first began
To riden out, he lovéd chivalry,
Truth and honóur, freedom and courtesy.
Full worthy was he in his lordés war,
And thereto had he ridden, no man farre.†
As well in Christendom as in Heatheness:
And ever honour'd for his worthiness.
At Alisandre‡ he was when it was won:
Full often time he had the board begun§
Aboven allé natións in Prusse.
In Lettowe‖ had he reysed,¶ and in Russe,
No Christian man so oft of his degree.
In Gernade ** at the siege eke had he be
Of Algezir, and ridden in Belmarie: ††
At Layas was he, and at Satalie,‡‡
When they were won; and in the Greaté Sea §§
At many a noble army had he be.
At mortal battles had he been fifteen,
And foughten for our faith at Tramissene ††
In listés thriés, and aye slain his foe.
This ilké worthy knight had been also
Sometimé with the lord of Palathie,*
Against another heathen in Turkéy.
And evermore he had a sovereign prise.†
And though that he was worthy, he was wise;
And of his port as meek as is a maid.
He never yet no villainy ‡ ne said
In all his life unto no manner wight.§
He was a very perfect, gentle knight.
But for to tellen you of his array;
His horse was good, but he ne was not gay.
Of fustián he weared a gipon§
All besmotter'd‖ with his habergeon;¶
For he was late ycome from his viáge,
And wenté for to do his pilgrimage."

In Leland's Itinerary we find the epitaph of "the noble and valiant knight Matthew de Gourney, who, in his life, was at the battle of Benamaryn (probably the Belmarie mentioned by Chaucer), and afterwards at the siege of Algezir against the Saracens, and also at the battles of L'Escluse, of Cressy, of Deyngenesse, of Peyteres (Poitiers), of Nazare, of Ozrey, and at several other battles and sieges, in which he gained great praise and honour." This warrior, whose adventures so strikingly illustrate those of Chaucer's knight, died in 1406, aged ninety-six years. It has been justly noticed as a peculiar feature of the times, that Chaucer does *not* bring *his* hero from Cressy and Poitiers, but from Alexandria and Lithuania; as though comparatively slight services against infidels were then thought of more importance than the most brilliant victories where Christians alone were concerned. It appears that it was usual in the fourteenth century for military men to go to Prussia, in order to serve with the knights of the Teutonic order, who were in a constant state of warfare with their then heathen neighbours. The youngest son of Edward III., Thomas, duke of Gloucester, and Henry, earl of Derby (Bolingbroke), afterwards Henry IV., were among the other distinguished men who shared in these expeditions.

In a very interesting manuscript of the 'Canterbury Tales,' written in the fifteenth century, which was bought at the Duke of Bridgewater's sale at Ashridge, and is now in the possession of the Duke of Sutherland, there is, at the commencement of each tale, a pictorial representation of the relater. The figures, it is stated,** are drawn and coloured with great care, and present a very minute delineation of the dress and costume of Chaucer's time. In the portrait of the knight, the countenance is highly expressive of sedateness and dignity. His folded head-covering is of a dark colour. His gipon is also dark, but his under coat red, which is discernible through the sleeves at his wrists. His legs are in armour, with gilt spurs. His dagger is in a red sheath by his side; and he wears little points or aiglets of red tipped with gold on his neck and shoulder.

We have spoken of the knight's romance being sobered down, but it is only sobered down, not evaporated. With old and young the universal motto of the knighthood of Europe during his time was, "Tout l'amour, tout à l'honor;" and our knight is far from being a recreant to the sentiments which gave to chivalry all its grace and glory. When, therefore, he is chosen to tell the first tale, he seems at once to have grown young again. Never certainly was a story more admirably adapted to knightly theme—more sounding with chivalrous feats of arms, and no less chivalrous devotion to the fair, than that he tells—the well-known 'Palamon and Arcite.' After its conclusion we do not hear much more of the knight, though what we do

* Godwin's 'Life of Chaucer,' vol. 2, p. 237.
† Farther.
‡ Alexandria, taken in 1365 by Pierre de Lusignan, king of Cyprus, but immediately abandoned.
§ He had been placed at the head of the table or board, as a compliment to his extraordinary merit.
‖ Lithuania. ¶ Journeyed.
** The city of Algezir, or Algeçiras, was taken from the Moorish king of Granada in 1344.
†† Supposed to refer to a place or kingdom of Africa.
‡‡ Layas, a town in Armenia, and Satalie, the ancient Attalia, were both taken by the king of Cyprus before mentioned; the former in 1367, the latter in 1352.
§§ Supposed to be the Mediterranean.

* Palathia in Anatolia. † Praise.
‡ "Anything unbecoming a gentleman."—*Tyrwhitt.*
§ A short cassock. ‖ Soiled. ¶ Coat of mail.
** Todd's 'Illustrations of Gower and Chaucer.'

hear is no less happily characteristic. The host's humorous but biting sarcasms against the Pardoner bring on a quarrel, which threatens serious consequences. The knight however interferes:

> "No more of this.————
> Sir Pardoner, be merry and glad of cheer;
> And ye, Sir Host, that be to me so dear,
> I pray you that ye *kiss* the Pardoner."

And so—

> "Anon they kissed and riden forth their way."

When the monk, who has said—

> "I will bewail, in manner of tragedy,
> The harm of them that stood in high degree,"

proceeds accordingly with the most intolerable perseverance through the history of the respective calamities of Lucifer, Adam, Sampson, &c., down to Crœsus, Peter of Spain, and Hugelin of Pisa, and for aught that is apparent, may still intend to go on to the very end of the pilgrimage, the good knight's patience fails:

> "Ho! quod the knight, good sire, no more of this:
> That, ye have said, it right enough y wis,
> And mochel more; for little heaviness
> Is right enough to mochel folk, I guess.
> I say for me it is a great disease
> Where as men have been in great wealth and ease,
> To hearen of their sudden fall, alas!
> And the contrary is joy and great solàce.
> As when a man hath been in poor estate,
> And climbeth up, and waxeth fortunate,
> And there abideth in prosperity;—
> Such thing is gladsome, as it thinketh me;
> And of such thing were goodly for to tell."

Doubtless the pilgrims agreed with him that "*little* heaviness" was "right enough;" and a very different kind of story therefore follows.

MANUFACTURE OF POTASH, OR 'BLACK SALTS,' IN UPPER CANADA.

[From a Correspondent.]

Many of the enterprising settlers in several of the districts of Upper Canada (the great local divisions of that country being known under the name of Districts) have for many years been engaged in the rude manufacture of an article universally known in that country under the name of 'Black Salts,'—but which, in fact, is the ordinary potash in a crude and very impure state. It is not a little singular that in scarcely another British colony besides Upper Canada, either in North America or elsewhere, or, indeed, nearly throughout the whole territories of the United States, do the settlers devote much of their attention to this subject; although, in very many instances, there is no obstacle to their doing so with as great (and in some cases greater) probability of being amply repaid for their trouble, since many other countries yield nearly or precisely the same species of forest-trees as the black salts of Canada are made from, and they have greater facilities for procuring the necessary pans and vessels to make it in.

All who have ever entertained any peculiar interest regarding new colonies, and their becoming peopled and the wilderness subdued, will be aware, I presume, that one of the chief and primary obstacles the first settlers have to encounter, is, that which the state of the primeval forest presents; for in many of our colonies, and our North American ones particularly, the entire country, when first entered upon by a race of enterprising settlers, is one interminable wilderness of forest-trees. Now, until means be taken either to annihilate those trees by cutting them down and then burning them, or to destroy the vital principle in them, and so leave them standing for a season, by a process called 'girdling'—that is, by cutting a circular notch quite round the tree, and completely through both the outer and inner bark—afterwards leaving them standing until through absolute decay they fall of their own accord,—the land cannot possibly be made to produce any of the necessaries of life, nor sustenance for any description of farm-stock. Among the poorer and more indolent portion of the settlers, in some particular districts, the system of girdling is practised to a considerable extent; but this certainly is a slovenly method of preparing the soil for crops of either grass or grain, and one which never ought to be adopted by such as possess the means of clearing off the timber in a better and more legitimate way, namely, by first cutting down all the trees, great and small, and afterwards having them cut into convenient lengths to be drawn together by oxen or rolled together by the use of handspikes, preparatory to their being set fire to and burned, root and branch.

The soil of Upper Canada being, for the most part, of a good quality, many of the trees grow to a large size; and the usual phrase of the country employed to designate the forest with this large growth of timber upon it, is, 'heavily timbered land.' We are in the habit of hearing much said about the very low rate at which land of a pretty good quality may be bought in Upper Canada and elsewhere; but in many places where the fee-simple of the soil might be purchased for 10*s*. or 12*s*. sterling the acre, the cost of clearing off the timber will amount to four or five times as much, thus making the first cost fully 3*l*. per acre; and if I were to include the fencing, probably 10*s*. or 15*s*. more. But in several of the most flourishing settlements, from the Head (as it is called) of Lake Ontario, westward the whole length of Lake Erie, many of the more enterprising settlers, as I before remarked, are in the habit of turning the timber to account, in a way that used never to be thought of, or, at all events, never attempted, that is, by the manufacture of crude potash, or 'black salts,' from the ashes of the burned timber; and since the process generally adopted by the Canadian settlers is a very simple one, and one that might be introduced into some of the other British colonies to the decided advantage of those persons who undertake to subdue the native forests, I will proceed to explain it.

Since it is not every species of forest-tree that contains alkaline salts, or at least in such quantities as to be worth the while of any one to attempt to extract them for useful purposes, it has become a matter of some consideration with parties who calculate upon turning the ashes of the forest-trees to a profitable account, to have an eye to the kinds of timber the soil produces in the greatest abundance, when making a selection of lands in a state of nature, or what is generally called a wild state; for where a great portion of the timber consists of resinous trees, there is little likelihood of turning black-salt-making to any advantage. Many experiments have been made, from time to time, upon the ashes of the sundry varieties of timber (not very scientific or accurate ones, however), for the purpose of ascertaining which sort yields the greatest quantity of alkaline salts; and it is now generally believed the species of elm, which is tolerably abundant in many parts of the forests of Upper Canada, yields rather more than any other sort of native timber. Next to the elm they consider one or two species of ash—the red beech, the black birch, the black maple, and locust tree—among the favourite sorts of timber to employ in making potash; but nearly every other species of 'hard wood' (a term used in contradistinction to all the varieties of pine, cedar, &c.) will answer to form part of a pile of logs that is intended

to be burned, and black salts afterwards extracted from the ashes.

There is no particular time of the year set apart for the making of black salts, but a dry season is always the most advantageous, as it would not be advisable to allow the wood-ashes to become wet by rain or otherwise before they are collected and put into the vats. These vats are very often cuts or sections from some hollow tree, instead of vessels made by the cooper, and sometimes the owners do not even go to the expense of putting bottoms in these hollow logs (tops they do not want), but place them upright on the broad-topped stump of some mighty monarch of the forest, and so contrive some ingenious means of collecting the material (lye) from which potash is made. But this is a slovenly plan; because the vessel having no bottom to it, the water which is poured upon the ashes with which the tub is filled passes too quickly through them, and so fails in extracting the whole of the salts. The more skilful potash-makers use four or five large rude tubs, each containing twelve or sixteen bushels of ashes, and a couple of large iron kettles or caldrons that will boil from thirty to forty gallons of lye each. As soon as practicable, after the piles of logs have been reduced to ashes, the ashes are carefully collected and taken to the vicinity of the 'boiling-camp;' and when there happens to be more than the vessels will hold, the surplus has to be stowed away under cover to avoid exposure to the weather. When a very copious supply of water is poured into the vats, or whatever they may be called, that contain the dry ashes, the alkaline salts will be the sooner extracted, and a couple of days will suffice to extract most part of the salts; but since very weak lye requires a great deal more evaporating (by boiling) in order to obtain a certain quantity of the black salts, the better managers in these matters saturate the ashes no more than is just necessary to extract the salts; and by letting the mass remain several days before the vents are opened for the liquor to escape by, a much stronger lye is produced, and hence the operation of boiling is much sooner over. To some this may seem of little consequence, whether there should be a thousand gallons to evaporate or five hundred only, but it should be borne in mind that when once the boiling process commences, it ought to be continued night and day until it is completed; for since (for the most part) it takes place in the open air, when the kettles are large and the fires are permitted to go out and the liquor to cool, considerable extra trouble is necessary; for vessels placed in the open air and over fires that are blown about by every breath of wind, require far more fuel to bring their contents to the boiling-point than if they had been placed in any ordinary apartment over a fire-place that was exactly adapted to the shape and size of the vessel.

When the lye has been boiled down to a consistency approaching a semi-fluid form (but the settlers have several plans of ascertaining when it has been sufficiently reduced), the mass is allowed to cool in the bottom of the kettles, where it crystallizes and becomes a tolerably solid substance, but neither white nor exhibiting any transparency; since during the process dust and ashes and smoke have had access to the boiling liquid; and this, in addition to the lye itself acquiring a dark colour from the mixed ashes, charcoal, and particles of soil, gives to the crude potash that dark appearance from which it derives its name, and it is in this state that the farmers, or the parties employed in clearing away the primeval forests of Upper Canada, generally bring their produce into the market. Formerly much of the black salts was sent all the way to Montreal or Quebec in the state in which it was taken from the kettles of the settlers, and there sold to parties who were at no great deal of cost or trouble in converting it into marketable potashes; but in most of the older and more flourishing settlements there now are persons (principally storekeepers), who are ready to buy it from the settlers, and who have the requisite conveniences connected with their establishments for converting the black salts into either pot or pearl ashes, as may seem to be the best calculated to answer their purpose; when it is afterwards packed in proper casks for the foreign markets, but which it can only reach through the distant markets of the sea-ports above mentioned.

I have known settlers clear twenty acres of land annually, and yet able to pay the whole of the expenses by the sale of their black salts; while the labour attending the manufacture of this article has been performed by the parties owning the land; but even if persons had been hired to perform it, the expense would not have exceeded a fourth part of the cost of clearing. To be sure, lands that will yield black salts to pay the cost of clearing, must be well stocked originally with the most favourable sorts of forest-trees for yielding salts; and since it is by no means necessary that the wood-ashes should be spread upon the ground as a manure (the maiden soils being sufficiently fertile—either naturally, or through additions of decayed leaves and other vegetable matter), they consequently are accounted of little or no value as regards the future crops the soil may be adapted to produce. Indeed this is frequently so obviously the case, that it is quite a common thing to find settlers, in districts where they neglect making black salts (and yet such as have the reputation of being good managers generally), after reducing to ashes the large piles of timber upon the lands they are clearing, not even going to the trouble of spreading them over the surrounding surface in the immediate vicinity, but contenting themselves with letting the whole remain upon the very place where the logs had been piled together and consumed.

I have been induced to dwell upon this subject at a greater length than I otherwise should have done, with the view of making this source of profit to new settlements more generally known than it appears to be at present; and not only more known, but more generally practised; and what, to me, seems a matter quite unaccountable, is this,—that throughout the United States, among a people who are confessedly so prone to mix up with their farming pursuits, speculations of various sorts connected with trade, manufactures, and commerce, this plan of turning the clearing of wild land to a profitable account, or at least of reducing the expense to little or nothing, should continue almost universally neglected from one end of the Union to the other.* There are, it is true, what goes by the name of 'asheries,' in many of the inland country towns and villages of the United States, where both pot and pearl ashes are manufactured; but the owners of these establishments employ only dry and clean ashes, such in fact as are made in the dwelling-houses, which the manufacturers themselves collect in their own carts, from house to house, at 4*d.* or 5*d.* per bushel; or if delivered at the ashery by the settlers, a trifle more is usually given.

Of all sights which can soften and humanise the heart of man, there is none that ought so surely to reach it as that of innocent children enjoying the happiness which is their proper and natural portion.—*Southey.*

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* The method of manufacturing potash from seaweed is described in No. 474. Potash-making is one of the secondary branches of industry practised by the peasantry in the forests of Sweden. (See No. 405.)



[Milton and his Localities. 1. The Portrait, from an etching by Cipriani, after a picture formerly in the possession of Jacob Johnson. 2. Ludlow Castle, from a view drawn in 1750. 3. Chalfont, from a wood-cut in a series of views of Poets' residences. 4. Christ's College, Cambridge, from a print in Ackermann's 'Cambridge.' 5. St. Giles's, Cripplegate, with part of the London Wall, from a view in Wilkinson's 'Londiniana.']

LOCAL MEMORIES OF GREAT MEN.

Milton.

The popular feeling towards great men never shows itself more gracefully than in the traditions it delights to preserve of the localities honoured by their presence; than when—with all the zeal of the devotee in Catholic countries displaying to some travel-worn but enthusiastic pilgrim the shrine towards which he has been so long journeying—it points out the house in which this great poet lived, or the tree that that philosopher had planted. And most universal is the reverence in which such feelings have their origin. With what pleasure we all trace the course of the lives of those illustrious men, step by step, from the house where they first saw the light, to that where, for the last time, their fading vision was cheered by its beams! With what gratification we busy ourselves in identifying any of the circumstances of those localities—the home—the scenery—the neighbourhood—with the growth and development of their minds, or with particular passages of their writings. With what peculiarly grateful delight we receive any fresh testimonies of their worth, any new evidences of their unswerving

constancy to the great principles they lived but to expound. Such considerations apply with peculiar force to the great poet whose local memories we are here about to illustrate; for in his case, party and sectarian intolerance has done its worst to prevent or destroy such reverential respect; and with what effect?—None, we may answer, of a permanent kind;—and as to the temporary,—had Milton required any other support than his own steady soul at all times furnished, he would have found it in the opinions of some of the best and purest men in his own country, in the general esteem and admiration in which he was held abroad. It is a matter suggestive of much useful reflection, that whilst foreigners of the most distinguished European reputation were seeking in the streets of the city for the birth-place of Milton, the man whom they thus honoured was in hourly danger of his life, and perhaps only avoided the scaffold by strict concealment.

That birth-place (on Dec. 9, 1608) was in Bread Street, Cheapside, the house of his father, an eminent scrivener, and was distinguished by a sign representing the armorial ensign of the family—the Spread Eagle. The house was left to the poet, but just at the period when its possession would have been most valuable to him, he lost it by fire: the great fire of London in 1666. There his education was sedulously commenced under the care of a person named Young, afterwards master of Jesus College, Cambridge. He was next sent to St. Paul's school, and from thence, at the age of *fifteen*, to Cambridge. Christ's College, of which, in 1624, he became a member, was originally founded in 1456, by Henry VI., under the name of God's House, but afterwards incorporated into the present establishment and liberally endowed by the Lady Margaret, Countess of Richmond, a great-granddaughter of John of Gaunt, and the mother of Henry VII. The buildings consist of a handsome quadrangle or principal court (130 feet by 120), and of a second court built on two sides, that next the garden and fields forming an elegant façade about 150 feet long. In the garden there is an interesting memorial of Milton, a mulberry-tree planted by his own hand, and which at once carries back the thoughts to the period when the young poet-student paced to and fro along its walks, book in hand, sometimes utterly wrapped in its contents, sometimes letting it fall listlessly by his side, to commune with a still greater spirit—his own sublime imagination! This garden was doubtless a favourite place; for he disliked the surrounding country, it was too level and unpicturesque; and, as he complained, had no soft shades to attract the Muse. Those scenes, however, have a tradition of their own in connection with Milton, and one too that would be exceedingly interesting, if we could have more faith in its truth than the poet's biographers seem to think we should have. The story first appeared in a newspaper published in the latter part of the last century:—"It is well known that in the bloom of youth, and when he pursued his studies at Cambridge, this poet was extremely beautiful.* Wandering one day, during the summer, far beyond the precincts of the University, into the country, he became so heated and fatigued, that reclining himself at the foot of a tree to rest, he shortly fell asleep. Before he awoke, two ladies, who were foreigners, passed by in a carriage. Agreeably astonished at the loveliness of his appearance, they alighted, and having admired him (as they thought) unperceived, for some time, the youngest, who was very handsome, drew a pencil from her pocket, and having written some lines upon a piece of paper, put it with her trembling hand into his own. Immediately afterwards they proceeded on their journey. Some of his acquaintance, who were in search of him, had observed this silent adventure, but at too great a distance to discover that the highly favoured party in it was our illustrious bard. Approaching nearer, they saw their friend, to whom, being awakened, they mentioned what had happened. Milton opened the paper, and, with surprise, read these verses from Guarini:*—'Ye eyes! ye human stars! ye authors of my liveliest pangs! If thus when shut, ye wound me, what must have proved the consequence had ye been open?' Eager, from this moment, to find out the fair incognita, Milton travelled, but in vain, through every part of Italy."

At college Milton soon distinguished himself; and although Dr. Johnson, in a well known passage, says, he "is ashamed to relate, what he fears is true, that Milton was one of the last students in either university that suffered the public indignity of corporal correction," we have Milton's own grateful testimony to the kind and enlightened treatment he there met with. In answer to one of his slanderers, later in life, who had said that, "after an inordinate and riotous youth spent at the University," he had been "at length vomited out thence," Milton writes, "for which commodious lie, that he may be encouraged in the trade another time, I thank him; for it gives me an apt occasion to acknowledge, publicly, with all grateful mind, *that more than ordinary favour and respect which I found above any of my equals* at the hands of those courteous and learned men, the fellows of the college," &c. This statement appears to us perfectly decisive that Dr. Johnson was mistaken.

From Cambridge Milton went into Buckinghamshire, where his father, now retired from business, had purchased an estate at Horton, near Colnebrook; and where, in the parish church, his mother lies buried. Here he is supposed to have written the 'Arcades,' 'L' Allegro,' and 'Il Penseroso,' 'Lycidas,' and 'Comus.' The 'Arcades' was performed at Harefield Place, the seat of the Countess Dowager of Derby, and about ten or twelve miles from Horton; that lady's children being the actors. The personal accomplishments of the Countess, and the woody scenery of Harefield, are supposed to be referred to in the following lines from 'L' Allegro:'—

> "Towers and battlements it sees
> Bosom'd high in tufted trees,
> Where, perhaps, some beauty lies,
> The cynosure of neighbouring eyes."

The house at Horton was pulled down about the year 1798. Through his acquaintance with the Countess of Derby, Milton was most probably introduced to the Earl of Bridgewater, her relation; and perhaps first heard from her lips the incident which there is reason to believe formed the groundwork of 'Comus.' "I have been informed from a manuscript of Oldy's," says Warton, "that Lord Bridgewater, being appointed lord-president of Wales, entered upon his official residence at Ludlow Castle with great solemnity. On this occasion he was attended by a large concourse of the neighbouring nobility and gentry. Among the rest came his children, in particular Lord Brackley, Mr. Thomas Egerton, and Lady Alice,

> 'To attend their father's state
> And new intrusted sceptre.'

They had been on a visit at a house of their relations, the Egerton family, in Herefordshire; and, in passing through Heywood Forest, were benighted, and the Lady Alice was even lost for a short time. This accident, which, in the end, was attended with no bad consequences, furnished the subject of a maske for a

* He was called the 'Lady of his College;' a designation he did not much relish.

* We omit the original in Italian.

Michaelmas festivity, and produced 'Comus.'" Lawes, also, the musician, who set the composition to music, dedicated the work to Lord Brackley, remarking that "the poem received its first occasion of birth from himself and others of his noble family." It was in the autumn of 1634 that 'Comus' was performed in the noble hall of Ludlow Castle, and by the very personages whose adventure had given rise to its production —Lord Brackley, his brother, and the Lady Alice. Both hall and castle are greatly changed since that day, though the latter still presents, in its bold and lofty site, its massy ruins, and towering keep, in its embattled wall, and immense fosse (now forming a delightful promenade for the inhabitants of the town), the proofs of its former strength and grandeur. Of its history—with all the great sieges it has known (having been invested by King Stephen, Simon de Montfort, Henry VI., and at different periods of the parliamentary war), we must not stop to speak. We quit Ludlow Castle, therefore, merely remarking as we pass that in one of the towers of the castle, Butler, another great poet, composed several cantos of his 'Hudibras.' On the death of his mother, in 1637, Milton travelled through Italy; but returned on hearing of the political troubles which broke out in this country about that time. He then lodged for a time in St. Bride's Churchyard, Fleet Street, where he commenced the education of his nephews, the Philips's, on a new system; but soon removed to a handsome house situated in a garden in Aldersgate Street. In 1643 he married the daughter of a gentleman of Forest Hill, Oxfordshire. Sir William Jones has given* a long and interesting account of a visit to this place, where he states that Milton resided for some time; and he is supported in this statement by a tradition still current among the villagers, and by the undoubted fact that Milton was intimately acquainted with his wife's family so early as 1627. The poet's house, he states, was close to the church; the greater part of it however had been pulled down, and the remains then forming a part of an adjacent farm. This marriage was at first unhappy; the lady went home to her father's house professedly for a time only, but soon announced to Milton her determination to remain there entirely. Milton consequently repudiated her, and published several treatises in justification of his right to do so. He proceeded also to pay his addresses to a beautiful young lady, when his wife, either alarmed at that circumstance, or at the misfortunes of her family, produced by their adherence to the king, met him unexpectedly one day at the house of a relation, in St. Martin's-le-Grand; and falling on her knees, conjured him to forgive her. Milton found that, in the words of his own 'Paradise Lost,' where Eve is praying Adam's forgiveness for the sin into which she had led him,—

"Soon his heart relented
Toward her, his life so late, and sole delight,
Now at his feet submissive in distress."

He not only forgave her, but when her family was reduced to utter distress by the ruin of the royal cause, received the whole—father, mother, brothers, and sisters—into his house to "protection and free entertainment." Before, however, he could accommodate so large a household, he had to obtain a much larger house; for his own father was now living with him, and his scholars had increased: accordingly he removed to Barbican. About this period was written the most splendid of all his prose works, the 'Areopagitica, or a Speech for the Liberty of Unlicensed Printing.' After the death of his wife's father, and the removal of the rest of the family, Milton went into a smaller house in Holborn, the back part of which opened into Lincoln's Inn Fields. This was in 1647. On the death of the king, two years later, Milton produced his tract on 'The Tenure of Kings and Magistrates,' proving that it is lawful to call to account a tyrant or wicked king, &c. The ability displayed in this and similar political productions doubtless recommended him to the Council of State of the Commonwealth, which, having determined to use the Latin language in all negociations with foreign nations, appointed Milton its Latin secretary. An official residence in Scotland Yard, then called Whitehall, was now provided for him; and it is said that here he used to hold a weekly table for the entertainment of foreign ministers and persons of learning, such especially as came from Protestant states. In 1651 Milton quitted Scotland Yard, in accordance with the arrangement of the parliamentary commissioners connected with the management of Whitehall, and removed to a pretty garden-house in Petty France, Westminster,* where he remained until within a few weeks of the Restoration. Here his wife died in childbed in 1656: to the same house, three years later, he brought a second partner; and from the same house followed her, dying under similar circumstances, also to the grave. His twenty-third sonnet, that 'On his deceased wife,' shows how deeply her loss had sunk into his mind:—

"Methought I saw my late espoused saint
Brought to me, like Alcestis, from the grave,
Whom Jove's great son to her glad husband gave,
Rescued from death by force, though pale and faint.
Mine, as when wash'd from spot of child-bed taint
Purification in the old law did save,
And such as yet once more I trust to have
Full sight of her in Heav'n without restraint,
Came, vested all in white, pure as her mind:
Her face was veil'd, yet to my fancied sight,
Love, sweetness, goodness in her person shin'd
So clear as in no face with more delight.
But oh, as to embrace me she inclin'd,
I wak'd, she fled, and day brought back my night."

To feel the full pathos of the last line, we must remember that Milton was now blind. He had been warned by his physicians several years before, whilst engaged in one of his great political tracts, that he must desist, or he would lose his sight. His duty would not, he thought, permit him to desist; and so the prediction was verified.

At the Restoration, Milton withdrew from the impending storm by taking shelter in secrecy with a friend in Bartholomew Close; and it is stated that a mock funeral was got up, so imminent was his danger considered. On the 27th of August, 1659, his books were burnt by the public hangman (an act in every way worthy of the prince who had Cromwell's mouldering bones taken up and exposed on a scaffold): in three days after, however, the Act of Indemnity appeared, by which it was supposed that he was relieved from danger. If the fact were so, his apprehension afterwards might have been a matter of form only. At all events he was apprehended, but discharged on payment of exorbitant fees. Milton referred to this period when he described himself as having fallen on evil days and evil tongues, and with darkness and with danger compass'd round: Richardson, indeed, says "he lived under continual terror of assassination." In the course of the next three or four years, Milton, whose mind appears to have been somewhat changeable as regarded his residences, lived first in Holborn, near Red Lion Fields; then in Jewin Street, where he married his third wife; and lastly in Artillery Walk, leading to Bunhill Fields, where he ended his "mortal

* Letter to Lady Spencer, 1769.

* Now Queen Square Place. Here also the late Jeremy Bentham lived for many years, and was accustomed to point out the garden, to visitors, as that in which Milton had frequently walked.

pilgrimage." When the plague begun in London, in 1665, Elwood, the Quaker, who acted occasionally as his secretary, took a house for him at Chalfont, in Buckinghamshire, "a pretty box," as he called it. Here Elwood visited him one day; and "after some common discourses," as he himself informs us, "had passed between us, he called for a manuscript of his, which being brought, he delivered to me, bidding me take it home with me, and read it at my leisure; and when I had so done, return it to him, with my judgment thereupon. When I came home, and set myself to read it, I found that it was that excellent poem which he entitled 'Paradise Lost.'" At Chalfont, also, 'Paradise Regained' is supposed to have been entirely written. When the danger from infection had ceased, Milton returned to Bunhill Fields; and here he published his great poem. At the door of this house he used to sit in warm sunny weather, to enjoy the fresh air, clad in a coarse grey coat; and there, as well as in his rooms, receive the visits of the numerous distinguished persons who came to see and converse with him. His domestic habits were still, as they had always been, "those of a sober and temperate student. Of wine or any strong liquors he drank little. In his diet he was rarely influenced by delicacy of choice, illustrating his own admirable rule,

> The rule of 'Not too much,' by temperance taught,
> In what thou eat'st and drink'st; seeking from thence
> Due nourishment, not gluttonous delight.

He once delighted in walking and using exercise, and appears to have amused himself in botanical pursuits; but, after he was confined by age and blindness, he had a machine to swing in for the preservation of his health. In summer he rested in bed from nine to four; in winter to five. If at these hours he was not disposed to rise, he had a person by his bed-side to read to him. When he first rose, he heard a chapter in the Hebrew bible, and commonly studied till twelve; then used some exercise for an hour; then dined; afterwards played on the organ or bass viol, and either sung himself or made his wife sing, who, he said, had a good voice, but no ear. It is related that when educating his nephews, he had made them songsters, and sing from the time they were with him. No poet, it may be observed, has more frequently or more powerfully commended the charms of music than Milton. He wished perhaps to rival, and he has successfully rivalled, the sweetest descriptions of a favourite bard, whom the melting voice appears to have often enchanted, the tender Petrarch. After his regular indulgence in musical relaxation, he studied till six; then entertained his visitors till eight; then enjoyed a light supper; and after a pipe of tobacco and a glass of water, retired to bed."*

On Sunday, the 8th of November, 1674, the great poet died: so serene was his departure, that the attendants in the room at the time were unaware of the precise moment. He was buried next to his father in the chancel of Cripplegate Church. A marble bust, by Bacon, with a tablet beneath, was erected in the middle aisle by the munificence of the late Mr. Whitbread. The bed on which he died was presented to the poet Akenside, who, we need hardly say, treasured it as a most precious gift.



[Tric-trac.—From a Painting by Teniers.]

BACKGAMMON.

The period of the invention of this game, which was for many centuries one of the most popular of all our sedentary amusements, appears to be unknown; but it seems to have been intended, in common with several other games uniting chance and skill, to place players of unequal ability more on a level than Chess permitted. The name furnishes an interesting proof of its antiquity in England, being no other than a genuine Saxon compound, *Bac*, or baec, and *gamen*, meaning back-game, so called because the game essentially consists in the players bringing back their men from their antagonist's tables into their own; or, because the pieces are sometimes taken up and obliged to go back, that is, re-enter at the table from which they came. During the Norman dominion the name was doubtless changed to that appellation under which we next find the game existing in this country, that is, Tables, a word derived directly from the French. The form of the backgammon-table at this period is shown in a beautifully illuminated manuscript of the thir-

* Todd's 'Life and Writings of Milton,' p. 243.

teenth century; it is square, as at present, but has no division in the centre, the points on either side being contained in a single compartment. A century later the division was made, as we find by a MS. of the time; but the points are still undistinguished by colours, according to the present, "and, indeed," says Strutt, "more ancient usage." The principal differences in the mode of playing then and now were, first, in having three dice instead of two, or reckoning a certain number for the third when that was missing; and, second, in placing all the men within the antagonist's table. Among the authors of the sixteenth and seventeenth centuries we find various allusions to the game under this and other names. Thus, in Shakspere's 'Love's Labour's Lost:'

"This is the ape of form, Monsieur the nice,
Who, when he plays at *tables*, chides the dice."

In a curious collection of epigrams, epitaphs, &c., published in 1663 under the title of 'Wit's Recreations,' we find an epitaph on one John Crop, which is throughout a continued series of puns upon the different terms and peculiarities of the game, and which therefore will, we doubt not, be interesting to all those who, in spite of the dictates of fashion, still adhere to this favourite old English sport:—

"Man's life's a game at tables, and he may
Mend his bad fortune by his wiser play;
Death plays against us, each disease and sore
Are blots; if hit, the danger is the more
To lose the game; but an old stander by
Binds up the blots, and cures the malady,
And so prolongs the game: John Crop was he,
Death in a rage did challenge, for to see
His play; the dice are thrown; when first he drinks,
Casts, makes a blot, death hits him with a cinque:
He casts again, but all in vain, for Death
By th' after game did win the prize—his breath.
What though his skill was good, his luck was bad,
For never mortal man worse casting had.
But did not Death play false to win from such
As he? No doubt, he bare a man too much."

Burton, in his 'Anatomy of Melancholy,' testifies as to the popularity of the game in his time. "The ordinary recreations which we have in winter, and in most solitary times busy our minds with, are cards, tables and dice, shovel-board, &c." Whilst acknowledging their utility, however, he points out the terrible mischief to which their abuse led: "which though they be honest recreations in themselves, yet may justly be otherwise excepted at, as they are often abused, and forbidden as things most pernicious. . . . For most part in these kind of disports, 'tis not art, wit, or skill, but subtlety, coney-catching, knavery, chance and fortune carries all away. . . . They labour most part not to pass their time in honest disport, but for filthy lucre, or covetousness of money. . . . A thing so common all over Europe at this day, and so generally abused, that many men are utterly undone by it, their means spent, patrimonies consumed, they and their posterity beggared, besides swearing, wrangling, drinking, loss of time, and such inconveniences which are ordinary concomitants. So good things may be abused, and that which was first invented to refresh men's weary spirits, when they come from other labour and studies, to exhilarate their mind, to entertain time and company, tedious otherwise, in these long solitary winter nights, and keep them from worse matters, an honest exercise is contrarily perverted."*

The other names to which we have alluded are tric-trac and tic-tack, the last being apparently a mere familiar abbreviation of the first; but Menage, a French philologist, considers tic-tack the more ancient appellation, and states that the game is still so called in Germany. The words are said to be derived "from touch and take, for if you touch a man you must play him, though to your loss."* To the preceding allusions to the game in the writings of different authors, we may add the remark of Hall, an English poet of the seventeenth century, that "tick-tack sets a man's intentions on their guard. Errors in this and war can be but once amended."†

Strutt states, in his well known work on 'Sports and Pastimes' (to which we are indebted for several of the facts contained in this sketch of the game), that at the commencement of the last century backgammon was a very favourite amusement, and pursued at leisure times by most persons of opulence, and especially the clergy, which occasioned Dean Swift, when writing to a friend of his in the country, sarcastically to ask the following question: "In what esteem are you with the vicar of the parish? can you play with him at backgammon?" In conclusion we may remark, that the history of this game adds one more proof to the immense amount of evidence that exists, to show how comparatively temporary after all were the effects of that most tremendous of revolutions—the Norman Conquest of England, in the way of de-nationalizing the country. The Saxon 'backgammon' was, as we have shown, the original name for the amusement, which was altered into 'tables' by the Normans; but centuries pass, gradually though silently the foreign appellation disappears, and the native resumes its sway. For a considerable period the game has been known as backgammon only, and so long as it shall exist for the future, will doubtless continue to be recognised by no other name.

* 'Anatomy of Melancholy,' part ii., sec. 2, No. 4, *Exercise rectified.*

CHAUCER'S PORTRAIT GALLERY.

THE SQUIRE.

As in the description of the Knight we have seen a full and complete development of that character which it was the object of the chivalric institutions to create, so in the Squire we perceive an intermediate stage in the process; the foundation, as it were, upon which the knightly character has been built. Thus whilst our knight fondly, but not unreasonably anticipates, that what he is, his son (the Squire) shall one day be, he cannot but at the same time remember that that son, with all his youthful grace and enthusiasm, his mental and bodily accomplishments, is but an epitome of his former self. And how exquisitely has Chaucer painted this young aspirant for military glories! The description, like the individual it celebrates, is "as fresh as is the month of May;" like the airs of that sweet season, it seems filled with the sense of new life—of growing vigorous beauty:

"With him [the knight] there was his son, a young Squiér,
A lover and a lusty bachelor,
With lockés curl'd as they were laid in press;
Of twenty year of age he was, I guess.
Of his statúre he was of even length,
And wonderly deliver,‡ and great of strength.
And he had been some time in chevachie§
In Flanders, in Artois, and in Picardy;
And borne him well, as of so little space,
In hope to standen in his lady's grace.
Embroider'd was he, as it were a mead,
All full of freshé flowrés, white and red.
Singing he was, or floyting|| all the day:
He was as fresh as is the month of May.
Short was his gown, with sleevés long and wide.
Well could he sit on horse, and fairé ride.

* 'Complete Gamester.' † 'Horæ Vacivæ,' 1646.
‡ Active, nimble. § A military expedition.
|| Playing on the flute.

He couldé songés make, and well indite,
Joust, and eke dance, and well pourtray, and write.
So hot he-lovéd, that by nighterial*
He slept no more than doth the nightingale.
Courteous he was, lowly, and serviceable,
And carv'd before his father at the table.

To this description, and the engraving at the head of the preceding paper, we may add a few words illustrative of the miniature portrait of the Squire in the manuscript before mentioned. His locks are there curiously curled, and give the idea of their having been "laid in press," whilst his short vest, with his cloak fluttering in the wind, is embroidered so as to give something of the appearance of the "mead all full of freshé flowrés, white and red;" the ground being of a green colour, lined with red, on which are small white spots or ornaments. His pantaloons are white, the upper part adorned with ermine. He wears a light but high blue cap, embroidered in the front. His horse is on the gallop, and evidently under graceful as well as skilful management. Such was the Squire of the reign of Edward III. at the age of twenty years, or within a few months of the period when he would be admitted into the knight's order. Let us now see what was the nature and what were the details of that education which produced such results.

Up to his seventh year, the boy destined for the honours of the military profession spent his time among the females of the family; he then entered upon the first stage of his career. He received the appellation of Page, or Valet, and was admitted to the society of his father, and of his father's friends and visitors. If his family was sufficiently affluent, companions of his own age, and with similar views, but of more straitened circumstances, were educated with him in the same house, who became his earliest friends and associates, and who often remained through life his devoted brethren in war. But if, on the contrary, his own family was comparatively poor, he then himself entered the house of some other nobleman or gentleman to receive the requisite training. Among the very earliest lessons instilled into his mind was that of unbounded admiration for the knightly character, as it was continually pointed out to him in the persons of the most worthy and accomplished warriors of the time. Upon them therefore he looked with awe, wonder, and earnest love; they were the standards of excellence he set up in his own mind, by which he would constantly measure himself. The physical exercises calculated to strengthen his youthful frame were now begun. As he approached nearer to the period of the honours and duties of the Squire, "the love of God and the ladies," in the irreverent but characteristic language of the time, was constantly cherished in him: he was taught, on the one hand, that no true votary of knighthood ever undertook any important adventure or entered into any serious engagement without previous prayer and devotional exercise; and on the other, that the knight who thought or spoke of the female sex with familiarity or disrespect was a recreant to his order, a most ignoble member of a most noble profession. Carrying out this principle, he was to consider it one of the highest privileges of his calling to be able to relieve their distress or avenge their wrong; and lastly, he was to look upon their opinion as the great tribunal where all his actions were to be judged —where he was to be disgraced by censure, or honoured by applause. Godwin remarks that "it is the remnant of this sentiment which has given to the intercourse of the sexes, from the days of chivalry to the present time, a refinement and a spirit of sanctity and honour wholly unknown to the ancient world."† We may add to this account of the education of the Page, that he was expected to select, even at this early period of youth, from among the virgins whose society he frequented, one, to whose service he was to devote himself, towards whom he might show the practical effects of the lessons so carefully inculcated. Thus passed his life until the fourteenth year. He was now raised to the dignity of Squire, and with ceremonies that impressed still more deeply upon the mind of the excited youth his own sense of the importance of the occasion. His father and mother, or two of his near relations, each holding a lighted taper, led him to the altar, upon which a sword and girdle had been previously laid. These the ministering priest took up, and having pronounced a benediction over them, girt the youth with his first warlike insignia. He now entered upon a life involving many and peculiar duties. It was an essential principle of chivalry that no office was sordid if performed with a worthy object; and so completely was this principle carried into effect, that the candidates for knighthood were not merely willing, but proud to wait upon their superiors, and perform for them the most menial services. And truly the dignity of the person raised the employment and made it no longer menial; the spirit in which it was performed gave it even grace and lustre. Thus we find the Pages, but still more the Squires, spreading the table, carving the meat (Froissart particularly mentions that the young Count de Foix, like Chaucer's Squire, carved before his father at the table), attending to the guests, bringing them water to wash, and afterwards conducting them to their bedchambers. The Squire also cleansed and kept in repair the arms of his lord, helped to equip him for the field, and remained by his side ready to render assistance either there or in the tournament. It cannot be denied but that "there is an exquisite beauty in offices like these, not the growth of servitude, not rendered with unwillingness or constraint, but the spontaneous acts of reverence and affection performed by a servant of mind not less noble and free than that of his honoured and illustrious master."*

During this period of probation for the highest office, the Squire spent a great part of each day in the open air, in exercises which conduced alike to the vigour of his body, the suppleness of his limbs, and the precision both of his eye and arm. He dressed and trained his own horses; he practised leaping, running, and mounting on horseback clad in all his armour; he scaled walls with the assistance merely of his hands and feet; above all he paid the greatest attention to those sports which, as it were, prefigured the exploits of that grand arena, the tournament, in which he hoped one day to exhibit his prowess and knightly accomplishments. "One of these was the Pel (in Latin, *palus*), practised with a post, or the stump of a tree, about six feet in height, which the youth, armed at all points, attacked vigorously on foot; and while he struck or thrust at the different parts which were marked to represent the head, breast, shoulders, and legs of an antagonist, he was taught to cover himself carefully with his shield in the act of rising to the blow. Similar to this was the Quintain, where the attack was made on horseback. A pole or spear was set upright in the ground, with a shield strongly bound to it, and against this the youth tilted with his lance in full career, endeavouring to burst the ligatures of the shield, and bear it to the earth. A steady aim and a firm seat were acquired from this exercise, a severe fall being often the consequence of failure in the attempt to strike down the shield. This, however, at the best, was but a monotonous exercise, and therefore the pole in process of time was supplanted by

* Night-time. † 'Life of Chaucer,' vol. i., p. 411.

* Godwin's 'Life of Chaucer,' vol. i., p. 415.

the more stimulating figure of a misbelieving Saracen, armed at all points, and brandishing a formidable wooden sabre. The puppet moved freely upon a pivot or spindle, so that unless it was struck with the lance adroitly in the centre of the face or breast, it rapidly revolved, and the sword, in consequence, smote the back of the assailant in his career, amidst the laughter of the spectators. . . . In addition to these exercises, the young squires and pages were taught to career against each other with staves or canes; and sometimes a whole party exhibited on horseback the various evolutions of a battle, but without the blows or bloodshed of a tournament."* Amidst all this preparation for the warfare that was to be the business of their lives, they did not forget to cultivate the gentler arts and accomplishments of peace. Like our young Squire, they learned to make "songes," to "indite," and "pourtray" well, and "eke dance;" like him, they might often have been heard "singing" or "floyting all the day."

We must now follow our hero through the last and long wished-for ceremonies which are to make him a knight, a member of that illustrious band whose glories have so dazzled his youthful vision. At the age of twenty-one he is eligible. Solemn and deeply impressive, even to the least imaginative of those concerned, were the rites attending the inauguration of the youthful warrior. He was first stripped of his garments, and put into the bath; on leaving this he was clad in a white tunic, as the symbol of purity, in a red robe as an emblem of the blood he was to shed in the cause of the faith, and, lastly, in a black doublet, as a token of the dissolution which awaited him as well as the rest of mankind. Thus purified and clothed, he kept a rigorous fast for twenty-four hours. When evening came, he entered the church, and there spent the night in solitude and prayer. His arms were piled upon the altar before him, an object of continual and fervent contemplation. His first act in the morning was confession, which it was expected should be more than usually strict and devotional; he then received the solemn sacrament of the Eucharist. The mass of the Holy Ghost was now performed, followed commonly by a sermon on the duties of a knight, and on the nature of the life opening upon the novice. His sponsors (certain approved knights) now accompanied him to the chancel or choir, and there pledged themselves for the rectitude of his future conduct. The priest then took the sword from the novice's neck, where it hung, and having blessed it, once more attached it to his neck. But one thing now remained—the appearance before the hero or lord who was to confer the actual investiture of knighthood. To him, therefore, the Squire (soon to lose that title for ever) went, and, falling upon his knees, demanded the honour to which he aspired. "To what end," inquired the lord, "do you desire to enter into this Order? If it is that you may be rich, repose yourself, and be honoured without doing honour to knighthood, then you are unworthy of it, and would be to the knighthood you should receive what the simoniacal clergyman is to the prelacy." A modest but collected and dignified answer to this question was expected; which given, the lord granted his request, and the proper oath was administered. Then came thronging round the young man knights, and frequently ladies, assisting him to arm; putting on first the spurs, then the hauberk, next the breastplate, the brassarts, or arm-pieces, and the gauntlets, and lastly the sword. Then he was dubbed, to use the modern English expression, derived from the French adoubé, or adopted. The lord rose from his seat, went up to him, and gave the *accolade*, or three strokes with the flat of his sword upon the shoulder or nape of the neck, adding, sometimes, a blow with the palm of the hand upon the cheek, saying, "In the name of God, Saint Michael, and Saint George, I make thee a knight;" and, occasionally, concluding with "Be thou brave, bold, and loyal." They now handed to the youthful knight his helmet, and brought him his horse, upon which he sprang, "vaulting like the feathered Mercury," into the saddle, and, brandishing his sword and lance, caracolled his horse along the pavement. On quitting the church he exhibited his grace and dexterity in a similar manner to the populace outside, whom he found eagerly waiting for their share of the spectacle.*

The tale which was told by the Squire of Chaucer is described by Milton as

"The story of Cambuscan bold,
Of Camball and of Algarsife,
And who had Canace to wife,
That own'd the virtuous ring and glass;
And of the wond'rous horse of brass
On which the Tartar king did ride."

It is a tale of the very first order of imaginative romance, but, unhappily, left imperfect.

* 'Pictorial History of England,' vol. i., p. 649.

Moderation is the silken string running through the pearl-chain of all virtues.—*Bishop Hall.*

He who saith there is no such thing as an honest man, you may be sure is himself a knave.—*Bishop Berkeley.*

Envy.—The envious man is in pain upon all occasions which ought to give him pleasure. The relish of his life is inverted; and the objects which administer the highest satisfaction to those who are exempt from this passion, give the quickest pangs to persons who are subject to it. All the perfections of their fellow-creatures are odious: youth, beauty, valour, and wisdom are provocations of their displeasure. What a wretched and apostate state is this! To be offended with excellence, and to hate a man because we approve him! The condition of the envious man is the most emphatically miserable; he is not only incapable of rejoicing in another's merit or success, but lives a world wherein all mankind are in a plot against his quiet, by studying their own happiness and advantage.—*Addison* (*Spectator*, No. 19).

THE DEER OF THE BRITISH ISLANDS.

The order Ruminantia abounds far beyond any other with quadrupeds immediately useful to man. We need scarcely refer to the ox, the sheep, the goat, the deer, the antelope, the camel, and the llama, as illustrations in point. The flesh of all is esteemed as food, that of some being more highly valued than that of others: and many, as the camel, llama, ox, buffalo, and yak, are used as beasts of draught and burden.

Every portion of the earth has its indigenous Ruminants, expressly adapted for the localities to which they are respectively allotted: so that—excepting, indeed, in the isles which stud the Pacific Ocean, or on the ice-bound shores of Greenland, where the sea is the park and chace, and where whales and seals are the herds and flocks of the fur-clad native—these animals are everywhere provided for the supply of the human race.

Restricting our observations to the Ruminantia of the British Islands, we find the ox, the sheep, the goat, and three species of deer, as tenants of our fields and grazing-grounds.

With respect to the ox, which is domesticated in every part of the world, we scarcely know whether to claim it as one of the indigenes of our island or the contrary. The relics of a wild race, once common, before our woods and forests were cleared, still exist in Chillingham Park; but whether, like the wild cattle

of the Pampas of South America, this race be descended from a domestic stock, having under some circumstances gained, at an early period, or soon after the introduction of its progenitors into England, its freedom,—or whether it be the indigenous wild origin of our domestic ox, is still a matter of uncertainty. If the latter point be affirmed, a question opens, is it identical with that species of which the fossil bones are found in recent deposits, and the skulls of which are said by Cuvier to resemble those of the modern domestic breed; and further, was this species identical with the Urus of the ancients? These are questions which involve much research, and, after all, are not perhaps capable of a satisfactory solution.

With respect to the goat and the sheep, of which the wild origins yet remain in obscurity, we may safely conclude that they are naturalised importations, and that they were brought here in a state of domestication by man; perhaps by the first westward tide of colonizers who pushed their migrations to this "ultima Thule."

The deer now remain for our consideration, and will form the subject of the present article.

Three species of deer inhabit our island at the present day, and these three belong each to a distinct group or section of the Linnæan genus Cervus, or the family Cervidæ of modern naturalists.

The fallow-deer belongs to the *platycerine* section of Colonel Hamilton Smith, the red deer or stag to the *elaphine*, and the roe-deer to the *capreoline* section.

As a preliminary to the history of these animals, it is necessary to give a short exposition of the essential characters of the Cervidæ. The first diagnostic consists in the acquisition of deciduous bony antlers (often, but erroneously, called horns) by the males only, of every species excepting the reindeer, of which both sexes acquire them. These antlers, or horns, differ in form in the different sections, and it is chiefly upon these differences that the sections are established. The horns of the ox and the antelope consist of processes of bone continued from the bones of the skull, and sheathed with a case of horn; they are therefore persistent: they are never shed. Not so those of the deer; they are annually lost and renewed, and, to a certain period of life, each pair in succession becomes more and more developed. To understand the process, we must place the skull of a deer before us. From the centre of each frontal bone (in the male) we see a bony protuberance rise, which, covered by the skin, is the foundation upon which the antlers are built as a superstructure. The days of nonage being passed, spring kindles the blood of the youthful deer; the arteries of the neck and head enlarge, and assume an increased action; and their ramifications, enveloping these frontal protuberances, now begin to deposit upon them layer after layer of osseous matter with astonishing rapidity; the antlers are growing, and as they grow the skin grows with them; while the arteries, enlarging and extending more and more, leave their course permanently impressed in furrows on the structure they are building. In due time the work is finished, the development of the horns being in proportion to the age and vigour of the individual. Still, however, the skin envelops them, surrounding every part and every fork; it is highly vascular, soft, and velvety; and is termed 'the velvet.' This velvet has yet to be got rid of, for these antlers are weapons destined for combat. By a gradual process the arteries of the velvet must be compressed and obliterated; for a sudden check to the flow of blood through them would turn the current with such violence upon the brain as to produce apoplexy. At the base of the horn, where it unites with the frontal protuberance, we observe a rugged ring or *burr*, and this *burr* is perforated with notches, through which the great arteries pass. The arteries which formed this *burr* are the last to close their action, and their work is now to cause the notches, through which the vessels to the velvet pass, to contract more and more, the compression of the vessels taking place in an according ratio, till at last the obstruction is complete. The velvet now dries, shrivels, splits into shreds, and peels off, the animal assisting to remove it by rubbing the antlers against a tree.

This process, as far as we have detailed it, occupies about ten weeks, and in that time a mass of phosphate of lime and gelatine, amounting to twenty pounds or more in the common stag, is elaborated from the blood of the system. In the extinct Irish elk, whose broad palmated horns measure from twelve to fifteen feet in their expanse, twice as much of this phosphate of lime as the rest of the skeleton contains was annually produced, a fact as wonderful as the rapidity of its deposition.

These horns, however, are only temporary, having ceased to have a vital connection with the skull, to which they now only *adhere*, not *grow*; they remain during the winter, till spring again excites the circulation of the blood, and then begins a process of absorption at the line of junction just below the *burr*, where they join the frontal protuberances. This absorption is continued until the union is so far dissolved that the least motion or the slightest rub against a tree disengages them; the skin now closes over the protuberances, and new antlers begin to be deposited. Of the annual increase of these antlers we shall speak when treating of each species separately.

In addition to deciduous horns, we may notice as characters, the presence of lachrymal sinuses,—of which the use is not known,—but which are also found in many of the antelopes.

The limbs of the deer are slender but firm; the body is round and compact, the neck long, the eyes large, and the ears erect and pointed; their general form betokens strength and activity, and their movements are peculiarly light and graceful. Teats on the female four.

The Fallow-deer (*Cervus Dama*, Linn.), which we shall first introduce, belongs, as stated, to the Platycerine section. The horns are divergent,—the upper part is flattened and palmate,—but the beam is round, with two antlers or branches directed forwards; the muzzle is naked.

This beautiful species is common in the parks and forests of England; on the Continent, however, at least in France, Germany, and Italy, it is rarely to be seen, —partly because less esteemed than in England, and because the practice of enclosing parks, and of attending to the animals, for the keep of which such enclosures are here expressly planned, is not there pursued. Fischer, speaking of the Fallow-deer, says, "It is more scarce in Europe than the stag, though it abounds in the parks (*in vivariis*) of England. It is found in Persia, China, and Abyssinia. In Denmark and Norway there is a variety to be regarded perhaps as a distinct species;" this he terms, from its uniform dark-brown colour, Var. *Maura*.

Desmarest says, "The Fallow-deer is peculiar to Europe, where, however, the species is less extensively spread than the Red-deer. It does not exist in Russia, but it would seem that it inhabits Lithuania, Moldavia, and Greece, the north of Persia and China, as well as Abyssinia; it is abundant in England, but very scarce in France and Germany."

Nothing can be more unsatisfactory than the above details; and the query opens upon us, of what country is the Fallow-deer an aboriginal? This inquiry we shall shortly pursue.



[Group of Fallow Deer.—From an original Drawing by W. Howitt.]

Desmarest regards the Fallow-deer as the Platyceros of Pliny, and the "spreading-horned deer" of Oppian ('Ελαφος εὐρύκερως).

Mr. Bell, in his 'British Quadrupeds,' observes, "It is probable that it (this deer) was brought to this country from the South of Europe, or from the western parts of Asia, in which places it is found to attain to a larger size than in its semi-domesticated state in our parks. It is found, indeed, in a more severe climate than our own, but it is only the dark-brown variety (Var. *Maura*, Fischer: *Cervus Dama; Mauricus*, Desm.), which is far more hardy than the usual one, and is well known to have been imported, on account of this quality, by James I. from Norway."

We suspect the true colour of this deer to be dark brown, like that of the Norway breed; and the spotted breed, as we mostly see it in our parks, to be a variety ather than a type of the species. Desmarest mentions a deer found in Spain, nearly as large as a stag, nd of a darker colour than our race, which is probaly to be referred to the present species. The young the red-deer or Stag is spotted with white, and e may easily conceive of a breed retaining these ttings, the specific characteristics of immatu-y, through life, and transmitting the tendency to pre-ve such markings to their descendants. White varieties of the deer are animals in which the white spots have become confluent, and excluded the brown; we see the same thing in various species of Coccinella (lady-birds), in which the yellow spots on the wing-cases (elytra) often spread so as to banish entirely the black ground-colour in which, in normal individuals, the yellow appears in little dots. If our view, then, be correct, the brown variety of the Fallow-deer, introduced by James I., was the true and genuine species, which, not having been influenced by cultivation in parks and a state of semi-domestication, retained its original hardiness and pristine vigour. It is to be observed that the term Fallow has no reference to spots; it is from the Saxon 'Falewe' (Falepe), which signifies of a reddish or brick colour. Having ventured it as our opinion that the dark-brown variety is the true breed of the Fallow-deer, we advance to the question as to whether it is one of the aboriginal natives of our island or not. We have already stated Mr. Bell's opinion and his observations respecting the Norway race. Highly as we esteem the acumen of this naturalist, we are strongly inclined in the present instance to differ from him. At the earliest period of English history we read of Fallow-deer existing wild in our forests; together with wild oxen, boars, and red-deer. They tenanted the great forest which, in the time of

Henry II., stretched northwards from London: Fitz-Stephen says, "Proximè patet foresta ingens,—saltus nemorosi ferarum,—latebræ cervorum, *damarum*, aprorum, et taurorum sylvestrum;" that is, "a mighty forest next (to London) stretches out, the embowered abode of wild beasts; the covert of stags, *deer*, boars, and wild bulls."

Be it remembered that deer are not tame animals, necessary to man, which he brings with him in his wanderings, when, nomadic in his habits, he traverses the earth in quest of pasturage and a settlement; of fresher springs and greener fields, on which to fix his tent and found an empire. The habits of the semi-barbarian, and indeed of the civilized, are to chase the wild, to drive them to a distance, and finally, to extirpate them; and where pleasure or the fancied interest of the few does not incite to a direct preservation of such, they speedily disappear: witness the beaver, the wild boar, and the wolf in England; and were it not for the laws of feudal origin and feudal spirit, the fox, the fallow-deer, and the stag would long since have shared their fate. The monarchs and barons of England loved the chase; it was their aim, therefore, to preserve the objects of it, and though some of these objects have been extirpated, as the march of civilization and the improvement of the country increased, others, not obnoxious from their destructive habits, have survived, becoming enclosed in parks, or restricted to wild and barren situations, where they cannot interfere with the agricultural labours of man. Hence, like the wild ox, the fallow-deer has its range now limited, its freedom curtailed; while the excellence of its flesh as food, and its beauty, rendering it an ornament to the pleasure-grounds of the noble and wealthy, have contributed to its preservation. As we now see it, therefore, it is not wild; not truly free; but the semi-domesticated denizen of the park and chace. Less fleet and bold than the stag, and preferring rich grassy plains and glades instead of wild hills and extensive moorlands, it would naturally be the first of our British deer to succumb to man, and in fact to need his protection. The conversion of our parks into farms would be in effect to annihilate our fallow-deer. We conceive, then, that this species, originally of a brown colour, is one of our native animals; that its spotting is the result of semi-domestication, and that with this was induced a delicacy of constitution rendering it necessary to have recourse again to the true wild breed still existing in Norway, for the purpose of improving the race or of enabling it to endure our winters.

It is interesting to watch the actions of a herd of these elegant creatures as they quietly graze in their pasturage. They are inquisitive, and, if not suddenly alarmed, will often approach very close to their observer, gaze attentively at him, and then bound gracefully away. Except during the pairing season, when the bucks associate with the does, and during the winter, when the troops mingle promiscuously together, the males and females form separate herds.

The female goes eight months with young, and she brings forth one, sometimes two at a birth, concealing them among the tall and thick fern, or the dense underwood of the park; they afterwards associate with the herds of does.

The bucks cast their horns about the end of February, and others begin to succeed them. It is, however, not until the second year that the young male has horns at all; and then they appear only as single snags; in the third year there are two branches produced, and the horn assumes a palmate form at the top; in the fourth year the palmation is more distinct; in the fifth the palmation is nearly at its maximum, and the two front branches are large; in the sixth year the horns arrive at their complete stage, a few snags or *advances* being added to the palmate portion. The buck acquires a different name in the language of 'veneric' every year to the sixth. The first year he is a *fawn;* the second, when the simple horns appear, a *pricket;* the third, a *sorrel;* the fourth, a *soare;* the fifth, a *buck of the first head;* the sixth, a *buck complete*. In Shakspere's play of 'Love's Labour's Lost,' the "extemporal epitaph on the death of the deer," in which Holofernes "something affects the letter," and in which three of the above terms are employed, is familiar to all.

During the pairing season, which takes place at the end of summer or in autumn, the males continually utter a deep tremulous cry, and often engage with each other in obstinate battles, which are continued day after day till the mastery is completely established. They are not, however, dangerous to persons approaching near them, as is the red deer, at least we never knew an instance of their attacking any one; and we have ourselves passed at this time through herds of them without seeing the slightest cause for apprehension.

M. Desmarest says, "They have a natural antipathy towards the red-deer, and retire from the localities occupied by the latter." How far this may be the case where both species tenant extensive wilds at large, we cannot say, but we have seen small troops of red-deer, both in Windsor and Chatsworth Parks, certainly not mixed with the fallow-deer, but surrounded by several herds of them at no great distance, and we could not perceive any tokens of dislike or animosity between them; it cannot be supposed that the two species seek each other's society, but indifference is not antipathy.

The delight with which deer and many other animals listen to music is well known. Playford, in his 'Introduction to Music,' says, "Travelling some years since, I met on the road near Royston a herd of about twenty bucks, following a bagpipe and violin, which, while the music played, went forward; when it ceased, they all stood still; and in this manner they were brought from Yorkshire to Hampton Court."

Mr. Bell, who quotes the above passage, adds, "A fondness for musical sounds is not confined to this animal; there is more than poetical truth in the power of the lyre of Orpheus over the beasts of the field; and Shakspere avails himself of this predilection in cattle, to form one of his exquisite illustrations. I have often, when a boy, tried the effect of the flute on cows and some other animals, and have always observed that it produced great apparent enjoyment."

We have many times noticed the fascination which music exercises upon mice and rats; it does so also upon the seal. Sir Walter Scott says,—

"Rude Heiskar's seal through surges dark
Will long pursue the minstrel's bark."

And Laing, in his account of a voyage to Spitzbergen, states that a numerous auditory of seals would surround the vessel, and follow it for miles, when the violin was played on deck.

The venison of the fallow-deer is far superior to that either of the stag or roe; its skin and horns are both useful, the one being prepared into a peculiarly soft leather, the other forming knife-handles and various things besides.

The fossil relics of a gigantic deer, commonly called the Irish elk, but in truth closely allied to the fallow-deer, are abundant in the bogs and marl-pits of Ireland, and are also met with both in England and the Isle of Man, and, according to Cuvier, in France and Italy.

A figure of the skull and horns of this animal, accompanying a paper on the subject, will be found in the 'Penny Magazine' for August 1, 1835 (vol. iv., page 299).

THE RELATIVE QUANTITIES OF LAND AND WATER ON THE SURFACE OF THE GLOBE.

A slight glance at a terrestrial globe will show that it is no easy matter to estimate the comparative quantities of land and water on the earth's surface. If the various boundaries between the seas and countries were straight lines, or were curved in any regular manner, the comparison might be made with less difficulty; but the sea-coasts are in reality so tortuous, that the common modes of measuring or calculating are ineffectual.

Dr. Halley, in order to determine the number of acres of land in each county of England, procured a large map in six sheets; cut out the counties one from another, by parting them at the boundary-lines by means of scissors or a penknife; and weighed each piece of paper separately. Supposing the paper on which the map was printed to have been equable in thickness in every part, and the scales to have been delicate, the comparative weights would have given the comparative area of the counties. But Dr. Halley was aware that this method could only give an approximation to correctness. Dr. Long afterwards applied the same principle, varied somewhat in detail, for determining the relative quantities of land and water over the whole earth. The engraved surface of a terrestrial globe is put on in a number of separate pieces. Dr. Long, therefore, took the separate pieces belonging to a 16-inch globe, cut out the parts representing the land from those representing the water, and weighed them separately; when he found that the former weighed 124 grains, and the latter 349 grains, thus making the surface of the sea about three times as great as the surface of the dry land.

Very little seems to have been done in this matter until recently, when Professor Rigaud of Cambridge made a very careful examination of the subject, using the printed paper surface for one of Cary's 21-inch globes, and also for one of Addison's 36-inch globes. Dr. Halley was well aware of the obstacles which had to be overcome in experiments of this kind, for he said:—"The moisture of the air imbibed by the paper did very notably increase its weight, which made me very well dry the pieces before I weighed them, that so I might be assured there was no error upon the amount; and, in so doing, I found that in a very few minutes of time their weight would sensibly increase by their re-imbibing the humidity of the air." He also observed:—"The map consisting of several sheets of paper, they were found to be of different thicknesses or compactness, so as to make a sensible difference, which obliged me to examine the proportion between the weight and area in each sheet." Professor Rigaud took the best precautions which he could devise to avoid these evils. He laid out the paper for some time in a large room, where there was no danger of much fluctuation in the state of the air, by which the substance attained a tolerably stationary condition as to saturation. To avoid the second evil, he caused a copy of the map to be printed on paper of very uniform thickness.

The surface of a 36-inch globe requires 4071½ square inches of printed paper to cover it; and this paper may be conceived as being divided into twenty-four equal pieces, called gores, shaped like the profile of a double convex lens, the wide central part representing a portion of the equator, and the sharp ends terminating at the poles. Each piece represents 180° of latitude and 15° of longitude; so that when placed side by side, the twenty-four pieces exactly cover the surface of the globe. If, therefore the land be cut out from the water, in all these pieces, and weighed separately in two parcels, the comparative quantities of each might be ascertained. But Professor Rigaud deemed it advisable to proceed on a different plan. He cut up the gores into more than one hundred pieces, and weighed the land and water portions of each piece separately. The chief reason for adopting this plan was, that if future discoveries should effect changes in the mode of delineating our maps, the particular part where the change occurred might be corrected without going over the computation in all its parts; also because by this means we ascertain the proportion of land and water, not only over the whole globe, but over any small part of it. These small parts are chosen with reference to certain distinct boundaries which never change. The equator passes round the earth equidistant from both poles: the tropics are parallel to the equator, and distant 23½° from it northward and southward: the polar circles are also parallel to the equator, but distant 23½° from the two poles respectively. Each gore was cut at these boundary lines, by which it was divided into six pieces or zones, viz. the arctic, the north temperate, the north tropical, the south tropical, the south temperate, and the antarctic.

The printed paper, divided into more than one hundred portions thus well defined, was carefully weighed. Each zone or piece was weighed first; then the parts representing the land and water were carefully cut (an operation which, for the whole number, occupied several days) and separately weighed twice over, so as to obtain the utmost possible accuracy. The polar zones, the central parts of Africa and Southern America, and some parts of Asia and of New Holland, have been so little explored, that conjecture was unavoidably necessary in making a subdivision of land and water at those parts. Professor Rigaud considered it safe to rank the whole of the antarctic zone as sea, until further knowledge is obtained of that region.

Every care was taken to separate the land and sea with accuracy. All the bays, æstuaries, and indentations were attended to, especially when the precise form of them appeared to indicate the representation of actual surveys. The several weights were taken to the *tenth of a grain*, a quantity which was likely to lead to as close an approximation to truth as the circumstances of the experiment admitted.

In order to ensure as much accuracy as possible, Professor Rigaud employed, as before observed, two different globe-surfaces, viz. that of Mr. Addison's 36-inch globe, and of Mr. Cary's 21-inch globe; and in the account which he gives of the results obtained, although he refers to the larger globe, yet the two yielded results so nearly alike as to be deemed almost identical. The modes in which the printed surfaces were divided by the engravers, were different in the two cases. The gores of the larger globe were made each for 15° of longitude, and there were five divisions of each for the zones (a sixth being made for the experiment, by cutting the torrid zone into two at the equator); whereas on the smaller globe, the gores were 20° wide, and extended from the equator to the pole. But these differences have no effect on the result of the experiment; because as all the separate pieces are made to join without overlapping, the total amount of paper surface is the same, however it may be divided for the convenience of the workman who has to fix it to the globular shell. We may also remark, that as the paper was cut up into a vast number of minute pieces, any slight inequalities of thickness would be likely to compensate each other, in taking the ratio of land and water.

In order to establish a convenient mode of comparison, Professor Rigaud conceived the whole surface of the globe to be divided into one thousand equal parts, of which each of the six zones contain, respec-

tively, about 41½, 250, 200, 200, 250, 41½. He gives tabulated results of more than two hundred separate weights, arising from the relative quantities of land and water contained in each of the pieces into which every gore was divided. These tables are too long to be presented here, but we will select such parts of them as will convey to the reader a tolerably definite idea of the subject; for as this appears to be by far the most exact experiment ever made on the subject, the results may be deemed authoritative. Supposing the whole surface of the earth to be divided into 1000 equal parts, then

The two polar zones	= 64·9137	water	18·0263	land
North temperate zone	=132·5247	„	126·6308	„
South temperate zone	=236·6060	„	22·5488	„
North torrid zone	=146·8162	„	52·5582	„
South torrid zone	=153·2156	„	46·1592	„

Or, dividing the whole surface into two hemispheres,

Northern hemisphere	=302·7846	water	197·2153	land
Southern hemisphere	=431·2916	„	68·7080	„

Out of 1000 equal portions of surface, 266, omitting fractions, are dry land, which are distributed among the continents as follows, the islands being included in those continents to which they seem most nearly to belong:—

Europe	16½
Asia	89
Africa	59½
New Holland	15½
North America	50½
South America	35
	266

We may remark that the correct determination of the ratio between the land and water on the earth's surface, however obtained, is now becoming a matter of scientific importance; for the amount of daily evaporation from the earth's surface, which is obviously greatly dependent on the amount of liquid surface, is one of the most interesting inquiries in meteorological science, with reference to rain, hail, dew, &c.

Famine in India.—I never saw the ravages of famine so dreadfully displayed as at Cawnpore. A great scarcity having occurred in the interior, the poor ryots, or farmers, were unable to support themselves and their families: the multitude of beings who had been able to earn a scanty subsistence in the fields during other years, were at this time thrown out of employment; provisions became extravagantly dear; the failure of so many crops deprived them of subsistence, and wretchedness succeeded: it was then that thousands of these poor creatures sought the towns, and were seen crowding every avenue to the cantonments. Cawnpore was filled with them; those who had youth and health brought in their aged and infirm relatives—poor disabled creatures who had for many years never left their hovels; disease and famine rendered them scarcely able to crawl along the parched roads, under an almost vertical sun: and when arrived, they depended entirely upon charitable contributions for support. Under every wall they assembled in crowds, taking up their position, and merely changing from one side of the road to the other, as the trifling shade afforded relief; and, thus established, they kept up a constant moaning and crying, or, as passengers drew near, raised an urgent clamour for alms; their miserable appearance setting forth a claim which few could resist. On three or four occasions we passed the dead and dying stretched on the roadside: their attenuated frames bore but too certain testimony of the immediate cause of their destruction. One morning we saw a poor wretch on the public road who was still breathing, but so feebly that it was evident his troubles were nearly over: a few miserable rags hung around him; but no one had lingered to see life depart, or to pay the last sad offices to the dead: he was only about half a mile from the cantonment, whither, doubtless, his fellow-travellers had passed forward totally unmindful of his condition, but anxious to ameliorate, if it were possible, their own misery. Another morning we saw a human body slung across a bamboo, which two men carried on their shoulders; the head and arms were dangling on one side, while the legs hung down on the other, and her long hair (for it was the body of a female) descended, filthy and matted, from her head. She was being conveyed to the river, into which the inanimate form would be carelessly thrown. On each occasion that we saw the dead or dying on the roads, Pariah dogs and birds of prey were lingering near: they were, however, scared away by those employed by the authorities to convey the corpses from public view; for none others would approach them, as only those of the lowest caste would touch the body of the poor emaciated wanderer.—*Three Months' March in India.*

Exhibitions of Mechanics' Institutes.—We have much pleasure in noticing the results of an Exhibition connected with the Mechanics' Institute at Derby, and which has proved not less successful than similar exhibitions at Leeds and Sheffield, an account of which was given in a former No. (507). The Derby Institute was established in March, 1825, and at its commencement was joined by 247 members; in 1832 premises were purchased for the sum of 1500*l.*; and in 1837, a lecture-hall was built. It is an elegant and spacious room, 75 feet long, 40 feet wide, and 35 feet high, and cost 2000*l.*, to raise which sum a mortgage of 1600*l.* was effected on the property of the institution. The Exhibition was proposed with a view of diminishing this burthen, and the nobility and gentry of the country were solicited for the loan of objects. This appeal was responded to in the most gratifying manner by persons of every shade of opinion, and four hundred individuals contributed five thousand articles, comprising paintings by eminent masters; specimens of sculpture; splendid assortments of porcelain of Derby and foreign manufacture; a great number of good models of various kinds; valuable specimens in ornithology, entomology, mineralogy, and geology; together with an extensive collection of domestic and foreign curiosities. An insurance for 15,000*l.* was effected on the property thus generously confided to the managers of the institution. The Exhibition was at first intended to be open for a month, but at the end of that period the number of visitors was daily increasing, and it was not eventually closed until it had been open eighteen weeks. The attractions of the Exhibition were increased by philosophical experiments; the arts of printing, weaving, and modelling were illustrated and exhibited in visible operation; and the musical classes of the Institution gratified the visitors with their performances. The terms of admission were fixed at 6*d.* each person, and tickets for the season were sold at 2*s.* 6*d.*: six thousand sixpenny catalogues were sold. The total number of persons admitted (the repeated visits of the holders of season-tickets being included) exceeded 96,000; the total receipts were 2119*l.*; the expenses 763*l.*, leaving a balance in favour of the Institution of 1355*l.* The inmates of the almshouses and of the union poorhouse, the police and the military of the town, were allowed to visit the Exhibition free of expense. The children of the Sunday and charity schools of Derby and of other towns were admitted at 2*d.* each; and not the slightest injury was done to any of the articles exhibited. The Exhibition Committee remark, in their Report, that "if such Exhibitions were more frequent, if amusements and recreations of a similar nature were substituted for those debasing sports which unfortunately prevail; judging from the orderly conduct of those who frequented the late Exhibition, and from the interest it evidently excited, there can be little doubt that a mighty change would soon be effected in the character and habits of our English population. Men (they remark) must have some kind of relaxation and amusement, which are necessary to the health both of body and of mind; and without some agreeable and innocent occupation for their leisure hours, it can occasion little surprise if they are driven to the baneful pleasures of the tavern and of the gin-shop." Referring to our account of the Leeds and Sheffield Exhibitions, we may thus tabularize their results and compare them with those at Derby:—

	Receipts.	Expenses.	No. of Visit
Leeds	3100*l.*	1100*l.*	183,913
Sheffield	1318*l.*	651*l.*	70,000
Derby	2119*l.*	763*l.*	96,000



['We, Hermia, like two artificial gods,
Have with our neelds created both one flower,
Both on one sampler, sitting on one cushion.']

SHAKSPERE'S DELINEATIONS OF FEMALE FRIENDSHIP.

We have before us a sketch by Mr. Severn, an English artist of great celebrity residing at Rome, of which the above wood-engraving is, as far as possible, a fac-simile. The engraving falls, however, somewhat short of the charming expression of the original drawing. The subject is one of those poetical creations of Shakspere of which we necessarily make a picture in our own minds as we read; but to the adequate representation of which, in the same degree, no effect of the sister art of painting, however successful, is altogether equal. The painter can only seize upon one point of view; the poet has the control of time and space, and presents us a succession of images harmonizing with and strengthening the leading idea. The lines which we have placed under Mr. Severn's sketch tell the story of the friendship of Hermia and Helena, as far as can be shown in one action. But the poet gives us a succession of actions. The whole passage is to be found in the third act of 'A Midsummer Night's Dream;' in which Helena, who fancies she has been injured by her friend Hermia, breaks out into the following most beautiful apostrophe:—

"Injurious Hermia! most ungrateful maid!
Have you conspir'd, have you with these contriv'd
To bait me with this foul derision?
Is all the counsel that we two have shar'd,
The sister's vows, the hours that we have spent,
When we have chid the hasty-footed time
For parting us,—O, and is all forgot?
All school-days' friendship, childhood innocence?
We, Hermia, like two artificial gods,
Have with our neelds created both one flower,
Both on one sampler, sitting on one cushion,
Both warbling of one song, both in one key;
As if our hands, our sides, voices, and minds,
Had been incorporate. So we grew together,
Like to a double cherry, seeming parted;
But yet a union in partition,
Two lovely berries moulded on one stem:
So, with two seeming bodies, but one heart;
Two of the first, like coats in heraldry,
Due but to one, and crowned with one crest.
And will you rent our ancient love asunder,
To join with men in scorning your poor friend?
It is not friendly, 'tis not maidenly:
Our sex, as well as I, may chide you for it;
Though I alone do feel the injury."

What a simple picture is this of the every-day life of two maidens growing together in love and confidence, as thousands still grow;—and yet how exquisitely poetical in its literal truth. The "counsel" shared together;—the little confidences gradually ripening into the revealing of the inmost heart, and thus becoming "sisters' vows;"—the longing to meet, the dread to part;—the common occupation, such as Mr. Severn has exhibited, but accompanied with that crowning circumstance—

"Both warbling of one song, both in one key."

He that wrote this charming description is, of all poets, the one who has left us the truest delineations of the tenderness, the constancy, the intrepidity, and the purity of woman.

Rosalind and Celia, in 'As you Like It,' present a most attractive dramatic exhibition of female friendship. Shakspere has again, with his innate knowledge of human character, made the strength of the affection of Celia for Rosalind depend upon habit and long companionship. She remonstrates against her father's determination to banish Rosalind, in these words:—

"If she be a traitor,
Why so am I; we still have slept together,
Rose at an instant, learn'd, play'd, eat together;
And wheresoe'er we went, like Juno's swans,
Still we went coupled and inseparable."

Shakspere has painted the existence of friendship amongst men, as in the instance of Antonio and Bassanio, in the 'Merchant of Venice;' and in that most touching description of the deaths of York and Suffolk, in 'Henry V.' :—

"Suffolk first died; and York, all haggled over,
Comes to him, where in gore he lay insteep'd,
And takes him by the beard; kisses the gashes,
That bloodily did yawn upon his face;
And cries aloud, 'Tarry, dear cousin Suffolk!
My soul shall thine keep company to heaven;
Tarry, sweet soul, for mine, then fly a-breast;
As, in this glorious and well-foughten field,
We kept together in our chivalry!'
Upon these words I came, and cheer'd him up;
He smil'd me in the face, caught me his hand,
And, with a feeble gripe, says, 'Dear my lord,
Commend my service to my sovereign.'
So did he turn, and over Suffolk's neck
He threw his wounded arm, and kiss'd his lips;
And so, espous'd to death, with blood he seal'd
A testament of noble-ending love."

But in this glorious picture there is high and heroic duty,—the sternness as well as the tenderness of chivalry blending in the friendship of the heroes. It is a picture of the friendship of men, which is generally the strongest amongst those who are struggling over the same rough path of life. The friendship of mere companionship, without firmer ties, seldom lasts beyond the age of boyhood, and then we go our own selfish and solitary ways. Leontes and Polixenes, in the 'Winter's Tale,' were the friends of childhood:—

"We were as twinn'd lambs, that did frisk i' the sun,
And bleat the one at the other."

Yet the remembrance could not preserve them from deadly hatred and suspicion.

THE OCCULT SCIENCES.

HOWEVER attractive the title of the present article might have proved two or three centuries ago, an historical point of view is the only one in which it is likely to interest readers of our own times. True science derives no support from mystery, and so far from having anything occult in her objects or proceedings, she proclaims her views far and wide, and rejoices and prospers in proportion to the numbers and free intercommunication of her votaries. It is true that she has her difficulties, but then she frankly confesses them, well knowing that the first step towards the removal of obstacles to her progress is the free recognition of their existence.

The so-called occult sciences had for their object the supernaturally influencing present and predicting future events. The labours and proceedings of the magician, the astrologer, and the alchemist have all had one or other of these ends more or less in view. The belief in magic and divination seems to have prevailed in all ages and in all countries, both in those to which we are accustomed to look back as the originators of ancient civilization, and others plunged in the grossest barbarism and darkness.

Allusions to the practices of magic or divination abound in the Scriptures: the Jews, ever after their captivity in Egypt, seem to have become addicted to them, and were frequently and expressly forbidden to engage in proceedings which with them formed but a branch of that idolatry to which they were so obstinately prone. The Jewish Cabala is referred back to a very remote antiquity, but it was seen only in all its varieties during the middle ages, reflecting the religious mysteries of Rabbinism. Cabala signifies tradition, and in its origin would seem to have been purely religious—a kind of secret theology endeavouring to explain the mysterious sense of the sacred writings; but prior to the middle ages it had become the imaginary vehicle for communicating with the beings of another world. It was divided into two sections, one treating of the occult virtues concealed in the world, and the other of supernatural knowledge. An inferior description of Cabala consisted in the combination of certain mysterious words, termed cabalistic words, which, carried about the person, afforded protection from demons, sickness, &c.: the famous combination *Abracadabra* acquired an immense reputation. Among the primitive Christians, and long since among the illiterate vulgar, texts of the New Testament were in like manner supposed to be of great efficacy in the recovery of the sick, &c.: the first two or three verses of the Gospel of St. John were especially esteemed for this purpose. The same cabalistic signs which could thus at one time avert disease and mischief, were employed under other circumstances to invoke demoniacal agency and work evil miraculously. In like manner the disposition of certain numbers has been considered as a principle involving the most wonderful power over futurity. The Hindoos, Egyptians, and Chinese, and the Europeans of the middle ages, have all entertained the highest opinion of the energy of magic squares and other cabalistic figures. The Greeks placed implicit faith in divination, so that, in the early period of their history, every action of importance was determined upon only after the observation of the flight of birds, the inspection of their entrails, of sacrifices, &c. At a later period they consulted oracles, whom they believed to be the direct interpreters of the wills of their deities. The oracle of Apollo at Delphi acquired, by the skill and duplicity with which the responses were framed, an immense and durable reputation. The Romans practised augury most extensively: at one time it formed a part of the regular system of instruction of their principal youth, some of whom were by a decree of the senate sent to each of the states of Etruria to be instructed in the art. The augurs, originally taken exclusively from the patrician class, but afterwards partially from the plebeian, were formed into a college, and held in the highest estimation: they possessed many privileges, and could not be deprived of their offices, however great the crimes they may have committed. Their omens were derived from the appearance of the heavens, the singing and flight of birds, the feeding of chickens, the examination of the entrails of victims, drawing lots, &c., &c. Some of these were of a very ridiculous nature. It is remarkable that many of the profoundest observers of antiquity believed in this power of predicting the future: but it must be recollected that among the ancients divination was associated more or less with the solemnities and mysteries of their religion. Nevertheless Cato expresses his surprise that

the soothsayers could keep their countenances while consulting their omens.

A fertile period of modern sorcery occurred when the northern tribes inundated and devastated the southern regions of Europe. The various nations of Huns, Goths, Allemanns, &c., all brought their traditions of magicians, sorcerers, &c., differing from each other; while those whom they conquered in their progress, oftentimes concealing themselves in the forests and caves, furnished yet further materials for legends of concealed dwarfs, sorcerers, &c. This was the case with the Finnish tribes overrun by the Swedes and Danes. Although the Celtic mythology yielded to the influence of Christianity, yet did it leave as a legacy its magicians and other supernatural beings. Thus we have the enchanter Merlin introduced with the fables of King Arthur, and his renown has survived every change, and reached our own times, both in this country and in France. After the Crusades, the Europeans mingled with the sterner ideas of the North the brilliant fairy-land of the Arabs and Persians; and from this source are derived many of our legends. The occupation of Spain by the Moors must have given great encouragement to the study of the occult sciences: they were at that time the best instructed people in Europe, and much addicted to this description of pursuits. The Jews also (to whose cultivation of these studies we have already alluded), by reason of their wandering habits, must often have become a medium of communication of the knowledge of the East to the West. During the sixteenth and seventeenth centuries, the belief in sorcery prevailed over entire Europe, and frequently gave rise to the most cruel persecutions. Professed in the persons of the charlatan, or the disordered and weakened in intellect, it had lost that solemn and important character which its connection with religious observances had invested it with in times of antiquity, and has gradually disappeared before the light of increasing civilization.

It is humiliating to recall to mind how short is the period since the belief in witchcraft was all but universal; and the cruel persecutions instituted for its suppression form one of the too numerous dark spots in modern European history. It would be idle here to enter upon the discussion concerning the identity of the witches mentioned in Scripture, and those unfortunate beings who have been distinguished by the appellation in more recent times. Suffice it to say that texts intended for special and temporary application have been seized hold of as justifying a cruel and sanguinary persecution, originating in the grossest folly and credulity, and directed for the most part against aged, feeble, and half-witted women, who, in many instances, by the torments they endured and the general persuasion of those around them, were brought to confess to a communing with the evil one, and the derivation thence of a power injurious to society. Some of the earliest accusations of this crime were, however, directed against different subjects, and veiled under the pretext of different objects: thus political enemies and heretical believers were frequently denounced as guilty of witchcraft. Who has not felt indignant at the mean vindictive charge of witchcraft brought by our ancestors against the noble and heroic Maid of Orleans? It is true that Joan of Arc believed herself inspired to the delivery of her country, when during her prayer for aid she believed she heard a celestial voice exclaiming—"Va, va, je seray à ton aide, va!" The accusation against the wife of the good Duke Humphrey of Gloucester for the same crime, as also those numerous ones invented by Richard III., must be familiar to all readers of English history. In different parts of Europe Commissions of Inquisition were appointed to search for and destroy all those who practised witchcraft; and it is from the statement of some of these inquisitors we learn the dreadful extent to which their cruelties were often carried. Pope Innocent VIII. issued a bull, deploring the increase of witches, and exhorting the inquisitors to more alacrity in their dreadful functions. The consequence was a bloody persecution spread over France, Italy, and Germany.

About 1485 Cumanus burned forty-one poor women in one year; and about the same period another inquisitor burned a hundred persons in Piedmont. In 1515 five hundred persons were executed at Geneva as "Protestant witches;" and Remigius, the inquisitor in Lorraine, boasts that in fifteen years he put to death nine hundred persons. In 1524 a thousand persons are said to have thus perished in Como. Witchcraft was made a frequent pretext for the persecution of the Albigenses in France, and that country continued the scene of the most cruel proceedings, until an edict of Louis XIV. forbidding further proceedings on account of the crime, was the cause of its entire disappearance. So true is it that cruel persecution multiplies rather than diminishes the crime it is directed against. In Spain the Inquisition was most active in its proceedings against sorcery; while in Sweden, in 1669, according to Dr. Horneck, more than fourscore persons lost their lives on the accusation of witchcraft, the only evidence against them being the reports of children.

Britain has unfortunately kept pace with other countries in these barbarous proceedings. Prior to the reign of Elizabeth condemnations had occurred for witchcraft, or rather for political offences with which this was said to be mingled; but in 1558 we find Bishop Jewel thus addressing her:—"It may please your Grace to understand that witches and sorcerers within the last four years are marvellously increased within your Grace's realm. Your Grace's subjects pine away even to the death, their colour fadeth, their flesh rotteth, their speech is benumbed, their senses are bereft. I pray God they never practise further than the subject."

Statutes were passed against sorcery and witchcraft; but, with some exceptions, the punishments resulting were neither severe nor frequent during the queen's reign. Far otherwise in that of her successor. The pedantic James had, even before his accession to the English throne, published a work upon the subject, and thus his fears of personal injury resulting to himself from the diabolical agency of witchcraft, and his vanity as an author, instigated him to an active investigation of the subject. He published a new edition of his 'Dæmonologie,' in 1603. In it he deplores the manifold increase of the crime; enters into an elaborate disquisition concerning its varieties, its detection and punishment, adopting with implicit faith all the gross delusions and glaring absurdities current among the mass of the people. The book is written in the form of a dialogue. After death having been denounced, the question is asked, "But ought no sexe, age, or ranke to be exempted?—None at al; for it is the highest point of idolatry, wherein no exception is admitted by the law of God." Speaking of the proofs of witchcraft, he says, "And besides there are two other good helpes that may be used for their triall: the one is the finding of their marke, and the trying the insensibleness thereof. The other is their fleeting in the water; for, as in a secret murther, if the dead carkasse be at any time handled thereafter by the murtherer, it will gush out of bloud, as if the bloud were crying to heaven for revenge of the murtherer, God having appoynted the secret supernaturall signe for tryall of that secret unnaturall crime; so it appears that God hath appoynted that the water shall refuse to receive them in her bosome that have shaken off them the

sacred water of baptisme, and wilfully refused the benefite thereof. No, not so much as their eies are able to shead teares (threaten and torture them as you please) while first they repent, albeit the women-kinde especially be able otherwaies to shead teares at every light occasion, when they will, yea, although it were dissemblingly like the crocodiles." Numerous other writers supported the views of the monarch, and at that epoch Reginald Scott was the only writer in this country who courageously combated the popular delusions; and in his 'Discoverie of Witchcraft' fully exposed the utter absurdity of attributing this evil practice to these miserable victims of persecution, and the cruelty of the means employed for their condemnation. His book was burned by the order of James, who also stigmatized the author in the preface to his 'Dæmonologie.' Indeed, it required no little moral courage in those days to take the part which Scott did, as all the early writers against the existence of witchcraft were looked upon as atheists. The statute of James declared witchcraft felony without benefit of clergy, and several individuals perished in consequence. But it was during the civil wars, upon the predominance of the Presbyterian party, that the greatest cruelties were practised against witches both in England and Scotland. Wretches under the name of witch-finders were encouraged to traverse all parts of the country in quest of these victims of ignorance and credulity. Evidence of the slightest, and often of the most absurd description, was received as all-sufficient: nay, the mere surmise of an ill-affected neighbour, or the occurrence of some calamity in her neighbourhood, has hurried many a poor old woman to the stake. The witch-finder was permitted to submit the suspected person to various cruel trials or tests, out of which it was scarcely possible she should come unscathed, seeing that the pain she suffered often extorted confession (for what will torture not extort?); and when this was not the case, the bystanders almost always drew unfavourable conclusions from the mode in which she went through her trials. A brutal fellow, named Matthew Hopkins, acquired an immense reputation as a witch-finder; and in 1647 published a pamphlet detailing the means he employed.

After the restoration of Charles II., these cruelties were but rarely practised, yet the statute of James I., which sanctioned them, was not repealed until the 9th of George II. One of the most extraordinary events which has been recorded in connection with popular delusions occurred in New England, when the colonists, themselves fleeing from oppressions at home, commenced, in 1692, a most furious and unaccountable persecution against persons accused of witchcraft. Individuals of all conditions and ages became involved in the proscription, and those who did not save themselves by speedy flight were executed: young children suffered, and even a dog was among the condemned. This frenzy disappeared as suddenly as it had commenced; many of the judges and jurors who had taken part in the horrid scenes publishing their penitence for the rashness of their conduct.

Education.—It is a great art in the education of youth to find out peculiar aptitudes, or, where none exist, to create inclinations which may serve as substitutes. Different minds are like different soils; some are suited only to particular cultivation; other will mature almost anything; others, adapted to a round of ordinary products; and a few are wasted, unless they are reserved for what is most choice.—*Walker's Original.*

A companion that is cheerful, and free from swearing and scurrilous discourse, is worth gold. I love such mirth as does not make friends ashamed to look upon one another next morning; nor men, that cannot well bear it, to repent the money they spend when they be warmed with drink. And take this for a rule: you may pick out such times and such companions, that you may make yourselves merrier for a little than a great deal of money; "'Tis the company, and not the charge, that makes the feast."—*Izaak Walton.*

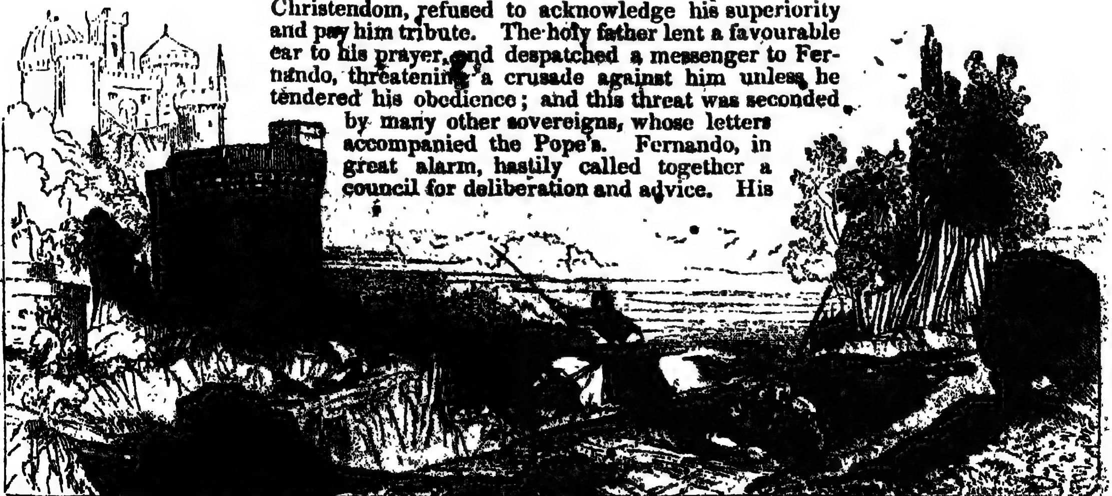
Town Gardens of the Japanese.—The front of the better class of houses is occupied by a large portico and entrance, where the palanquins, umbrellas, and shoes of visitors are left, where servants and persons on business wait, &c.; and which is connected with all the domestic offices. The back of the house is the part inhabited by the family; and it projects into the garden triangularly, for the benefit of more light and cheerfulness. These gardens, however diminutive, are always laid out in the landscape-garden style, with rocks, mountains, lakes, waterfalls, and trees; and uniformly contain a family chapel or oratory. Absurd as such would-be pleasure-grounds may seem, when confined in extent, as must be the garden even of a wealthy householder in the heart of a city, this intermixture of verdure nevertheless contributes greatly to the airiness and gay aspect of the town itself. And we are told that the very smallest habitations possess similar gardens, yet more in miniature, sometimes consisting of what may be called the mere corners cut off from the triangular back of the house, with the trees in flower-pots.—*Siebold's Manners and Customs of the Japanese.*

A Gigantic Iceberg.—At twelve o'clock we went below; and had just got through dinner, when the cook put his head down the scuttle, and told us to come on deck and see the finest sight that we had ever seen. "Where away, cook?" asked the first man who was up. "On the larboard bow." And there lay floating in the ocean, several miles off, an immense irregular mass, its top and points covered with snow, and its centre of a deep indigo colour. This was an iceberg, and of the largest size, as one of our men said, who had been in the Northern Ocean. As far as the eye could reach, the sea in every direction was of a deep blue colour, the waves running high and fresh, and sparkling in the light; and in the midst lay this immense mountain-island, its cavities and valleys thrown into deep shade, and its points and pinnacles glittering in the sun. All hands were soon on deck, looking at it, and admiring in various ways its beauty and grandeur. But no description can give any idea of the strangeness, splendour, and, really, the sublimity of the sight. Its great size—for it must have been from two to three miles in circumference, and several hundred feet in height; its slow motion, as its base rose and sank in the water, and its high points nodded against the clouds; the dashing of the waves upon it, which, breaking high with foam, lined its base with a white crust; and the thundering sound of the cracking of the mass, and the breaking and tumbling down of huge pieces; together with its nearness and approach, which added a slight element of fear—all combined to give it the character of true sublimity. The main body of the mass was, as I have said, of an indigo colour, its base crusted with frozen foam; and as it grew thin and transparent towards the edges and top, its colour shaded off from a deep blue to the whiteness of snow. It seemed to be drifting slowly towards the north, so that we kept away and avoided it. It was in sight all the afternoon; and when we got to leeward of it, the wind died away, so that we lay-to quite near it for a greater part of the night. Unfortunately there was no moon; but it was a clear night, and we could plainly mark the long regular heaving of the stupendous mass as its edges moved slowly against the stars. Several times in our watch loud cracks were heard, which sounded as though they must have run through the whole length of the iceberg, and several pieces fell down with a thundering crash, plunging heavily into the sea. Towards morning a strong breeze sprang up, and we filled away and left it astern, and at daylight it was out of sight. . . . . . No pencil has ever yet given anything like the true effect of an iceberg. In a picture they are huge uncouth masses stuck in the sea; while their chief beauty and grandeur—their slow stately motion, the whirling of the snow about their summits, and the fearful groaning and cracking of their parts—the picture cannot give. This is the large iceberg; while the small and distant islands, floating on the smooth sea in the light of a clear day, look like little floating fairy isles of sapphire.—*Two Years before the Mast.*

THE CID.—No. V

"I'm the Cid, Rodrigo Diaz,
Honour of Castile and Spain;
Look unto my deeds of prowess!
Who could greater glory gain?"

In the year 1055, Henry III., Emperor of Germany, complained to Victor II., who sat in the chair of St. Peter, that Fernando of Castile alone, of all the potentates of Christendom, refused to acknowledge his superiority and pay him tribute. The holy father lent a favourable ear to his prayer, and despatched a messenger to Fernando, threatening a crusade against him unless he tendered his obedience; and this threat was seconded by many other sovereigns, whose letters accompanied the Pope's. Fernando, in great alarm, hastily called together a council for deliberation and advice. His



nobles counselled him to submit, lest he should lose his kingdom. "The good Cid" was not present when the council commenced its deliberations, but he now entered the hall; and hearing what had passed, "it grieved his heart sore," and he thus broke forth:—

"Woe the day thy mother bore thee!
Woe were for Castile that day,
Should thy realm, oh, King Fernando,
This unwonted tribute pay!

Never yet have we done homage—
Shall we to a stranger bow?
Great the honor God hath given us—
Shall we lose that honor now?

He who would such counsel lend thee,
Count him, king, to be thy foe;
He against thy crown conspireth,
And thy sceptre would o'erthrow.

Thy forefathers erst did rescue
This fair realm from Paynim sway;
Sore they bled, and long they struggled—
None to aid them did essay.

Sore they bled—my life I'd forfeit
Ere I'd wear the brand of shame,
Ere I'd stoop to pay this tribute,
Which none hath a right to claim.

Send then to the Holy Father,
Proudly thus to him reply—
Thou, the king, and I, Rodrigo,
Him and all his power defy."

Notwithstanding the daring boldness of this counsel, it pleased the king; and he sent back the messengers to the Pope, begging his Holiness not to interfere, and at the same time challenging the Emperor and all his tributary kings. Straightway a host of eight thousand nine hundred men was gathered, and, commanded by the Cid and accompanied by the king, it crossed the Pyrenees, and met the Count of Savoy, "with a very great chivalry" (twenty thousand men, says the Chronicle), on the plains of France. The Emperor's forces were routed and the Count made prisoner; but the Cid released him on his giving up his daughter as a hostage. Rodrigo having in another battle defeated "the mightiest power of France," the allied sovereigns in alarm wrote to the Pope, beseeching him to prevail upon the king of Castile to return to his own land, and they would ask no more for tribute, for none might withstand the power of the Cid. On these terms Fernando withdrew his forces The Chronicle adds, that the Pope and the allied sovereigns made a solemn covenant with him that such a demand should never again be made upon Castile.

In order that we may not withdraw the attention of our readers from what bears an immediate reference to the Cid, we pass over Ximena's letter to the king, complaining of the long absence of her lord, the king's reply, the ceremony of her purification after her first delivery, the subsequent death-bed scene of "the good king" Fernando, and the distribution of his territories among his children—which things are recorded in many romances full of interest—and we proceed to notice the next striking event in the life of our hero.

Sancho II., who in 1065 succeeded his father on the throne of Castile, went to Rome to attend a council convoked by the holy father. On his arrival, he was admitted to kiss the pope's hand, which we are informed he did "with great courtesy," as did also the Cid and the other knights in his train, each in turn, according to his rank. After this our Cid chanced to stray into the church of St. Peter, and there beheld seven marble seats set for the Christian kings then in Rome; he remarked that that of the French king was placed next the papal throne, while that of his own liege was on a lower step. This fired his wrath, and he kicked the French king's seat to the ground with such violence as to break it to pieces, and set his own lord's chair in the place of honour. Hereon exclaimed a noble duke called the Savoyard, who stood by,

"Cursed be thou, Don Rodrigo!
May the Pope's ban on thee rest;
For thou hast a king dishonour'd,
Of all kings, I wot, the best."

The Cid replied—

"Speak no more of kings, Sir Duke;
If thou dost of wrong complain,
It shall straightway be redressed—
Here are none beside us twain."

But the Duke did not seem inclined to fight, so the Cid stepped up to him, and gave a hard thrust,—a departure, it must be confessed, from his wonted courtesy, but to be accounted for, if not excused, by the state of irritation in which he was at the moment. The Duke received the insult in silence, but made his complaint to the Pope, who immediately excommunicated the Cid. Rodrigo, whose wrath had now subsided, hereon fell prostrate before his Holiness, and besought absolution:

"I absolve thee, Don Ruy Diaz,
I absolve thee cheerfully,
If while at my court thou showest
Due respect and courtesy."

Hardly had Sancho ascended the throne of Castile, when he sought to wrest from his brothers Alfonso, king of Leon, and García, king of Galicia, the dominions they had inherited from their father, and in both cases, owing to the wisdom and valour of the Cid, he was eminently successful. On his first encounter with Alfonso, Sancho had the worst of it, his troops being put to the rout, but he was cheered by the counsel of the Cid:—"List, my liege! Thy brother's hosts are now feasting and making merry in their tents, as is the wont of the Leonese and Galicians after a victory; and soon will they be buried in slumber, neither heeding nor fearing thee; but gather thou together as many of thine own men as may be, and at break of day fall on the foe manfully, and verily thou wilt have thy revenge." This counsel was followed with great success, the men of Leon were overthrown, and Alfonso himself made prisoner, but his troops rallied, and in their turn captured Don Sancho. As he was being led off the field by fourteen knights, "the renowned one of Bivar" came up, and begged his release in exchange for their King Alfonso. They sternly replied—

"Hie thee hence, Rodrigo Diaz,
An thou love thy liberty;
Lest, with this thy king, we take thee
Into dire captivity."

At this, "great wrath seized on the Cid," and, regardless of their numbers, he attacked them, and with his single arm routed them, and set his king at liberty.

Our hero was equally instrumental in the conquest of Don García, but we refrain from particulars, as it is not our intention to dwell so much on his warlike deeds as on the other events of his life, which will prove of more general interest. We pass then at once to the expedition against Zamora.

Having deprived his brothers of their kingdoms, and his sister Elvira of the town of Toro, her only inheritance, Don Sancho marched against Zamora, which the old king had bequeathed to his other daughter, Urraca, but which the new monarch considered his rightful inheritance, and eagerly desired to possess, in order that his dominion might in no way be inferior to that of his predecessor. His army being encamped before the town, the king rode out with the Cid, to re-

connoitre the place, and thus expressed his admiration of its strength:—

"See! where on yon cliff Zamora
Lifteth up her haughty brow,
Walls of strength on high begird her,
Duero swift and deep below.

Troth! how wondrous strong she seemeth
In her panoply of towers;
She, I wot, might bid defiance
To the world and all its powers!

Wert she mine, that noble city,
Spain itself were not so dear;
Cid, my sire did thee much honour,
Great love eke to thee I bear.

Wherefore charge I thee, Rodrigo,
As a vassal loyal and true,
Hie thee straight unto Zamora,
This my bidding for to do."

He charged the Cid to tell his sister Urraca to deliver up the city, either for a sum of gold or in exchange for some other town, and promised to swear, with twelve of his vassals, that he would fulfil the agreement; but as the strongest inducement for her to accede to his demand, he added—

"If she will do none of these,
I will e'en by force possess it."

The Cid obeyed with great reluctance, for he had before endeavoured to dissuade the king from his unrighteous purpose, and had sworn that he would not himself take up arms against Zamora. As he approached the walls, the Infanta Urraca calls out to him from the ramparts,—

"Back! begone with thee, Rodrigo!
Proud Castilian, hence! away!
How canst thou thus dare assail me?
Hast forgot that happy day,

When, at Santiago's altar,
Thou wast made a belted knight?
The king, my sire, was thy godfather,
And put on thy armour bright;
My mother brought to thee thy charger,
By my hands thy spurs were dight.

Woe is me! I thought to wed thee;
Fondly did I love thee, Cid;
But my sins, alas! forbad it,
Thou didst with Ximena wed.

With her thou hadst well-fill'd coffers,
Honour wouldst have won with me;
And, if wealth be good, still better
Rank and honour were to thee."*

These words rendered the Cid very sorrowful, and he returned to the camp without having accomplished the purpose of his embassy. But, according to another romance, which agrees with the 'Chronicle' in this, as well as in omitting all notice of Urraca's confession, he entered the city, and delivered his message. The Infanta heard it with many tears, and cried—

"Woe is me, a lonely woman!
Woe is me, a maid forlorn!
King, thy dying sire remember;
Be not Sancho still forsworn!

From thy brother Don García
Thou hast crown and kingdom ta'en;
Cast him eke into a dungeon,
Where he ruefully hath lain.

Next, thy brother Don Alfonso
Thou didst drive him from his throne;
Fled he straight unto Toledo,
Where he dwelleth woe-begone.

From my sister, Doña Elvira,
Toro hast thou wrested, too;
Now of me thou would'st Zamora;
Woe is me! what shall I do?"

Hereon arose Arias Gonzalo, an aged noble, who was the Infanta's chief counsellor, and, to console her, he proposed that the sense of the citizens should be taken with regard to this matter. This was accordingly done, and—

"Then did swear all her brave vassals
In Zamora's walls to die,
Ere unto the king they'd yield it,
And disgrace their chivalry."

When the Cid returned with this answer, the king was exceeding wrathful, and accused him of having suggested it, because he had been brought up in Zamora, and was ill affected towards the expedition. So wrathful was Don Sancho, that he exclaimed, "Were it not for the love my father bore thee, I would straightway have thee hanged; but I command thee to begone in nine days from this my realm of Castile." The Cid went his way to the Arab court of Toledo, but his exile was not of long duration, for the king, through the representations of his nobles, soon began to regret the loss of so valiant a liegeman, and sent to recal him. When he heard of his approach,

"Forth two leagues he went to meet him,
With five hundred in his train;
When the Cid beheld the monarch,
From his steed he sprung amain.
Kneeling, the king's hands he kissed,
Lowly homage did he pay;
Then, with joy of all, uprising,
Took he to the camp his way."

One day during the siege of Zamora there came running from the city, hard pursued by the sons of Arias Gonzalo, one who made straight for the tent of the King Don Sancho. This fellow, whose name was Bellido Dolfos, said that he had been forced to fly for his life, for having advised Arias to surrender the city; he professed himself a warm partisan of the king, and offered to show him a postern through which he and his forces might enter Zamora. Though the king was warned by Arias Gonzalo from the ramparts,—

"Ware thee! ware thee! King Don Sancho,
List to my admonishment!
From Zamora's walls a traitor
Hath gone forth with foul intent,"

he was imprudent enough to sally forth with Bellido alone, in order to see this postern, and even handed to him, for a moment, the hunting-spear he bore in his hand. Dolfos, seeing him unprotected, raised himself in his stirrups, and with all his force hurled the spear into the king's back. It passed completely through him, and he fell in the agonies of death. The traitor spurred away towards the town, but not alone, for the Cid had seen the deed, and, springing to his horse, galloped after him; but not having buckled on his

* Though the romances make mention of but one Ximena, it may be doubted whether the Cid had not two wives of that name. Father Berganza, who spared no pains to verify the events of our hero's life, seems to regard his marriage with Ximena Gomez as fictitious, and thinks his true wife was Ximena Diaz, daughter of Don Diego, Count of the Asturias, and of the royal blood of Leon, and that he married her in the reign of Sancho II. Certain it is that on her tomb, which we have seen in San Pedro de Cardena, she is styled "Ximena Diaz, grand-daughter of the King Alfonso V. of Leon." Sandoval and Berganza give at length the marriage settlement of the Cid and Ximena Diaz, dated 1074, and still preserved, it is said, in the archives of the cathedral at Burgos. Lest it should be supposed that she was so called from the surname of her husband, we must observe that Spanish females do not lose their maiden names on their marriage.

spurs, he was unable to overtake him before he reached the gates. Then cried he in his wrath,—

> "Cursed be the wretch! and cursed
> He who mounteth without spur!
> Had I arm'd my heels with rowels,
> I had slain the treacherous cur."

The Castilian knights gathered around their dying king, and all flattered him with the hope of recovery, save the veteran Count of Cabra, who charged him to take no heed to his body, but to commend his soul to God without delay, for his end was at hand. While faltering out his thanks for this counsel, the hapless Don Sancho expired.

> "Such-like fate awaiteth all
> Who in traitors put their trust."

Seeing without Sight.—Let a man have all the world can give him, he is still miserable, if he has a grovelling, unlettered, undevout mind. Let him have his gardens, his fields, his woods, his lawns for grandeur, plenty, ornament, and gratification; while at the same time God is not in all his thoughts. And let another man have neither field nor garden; let him look only at nature with an enlightened mind—a mind which can see and adore the Creator in his works, can consider them as demonstrations of his power, his wisdom, his goodness, and his truth; this man is greater, as well as happier, in his poverty, than the other in his riches. The one is but little higher than a beast, the other but a little lower than an angel.—*Jones of Nayland.*

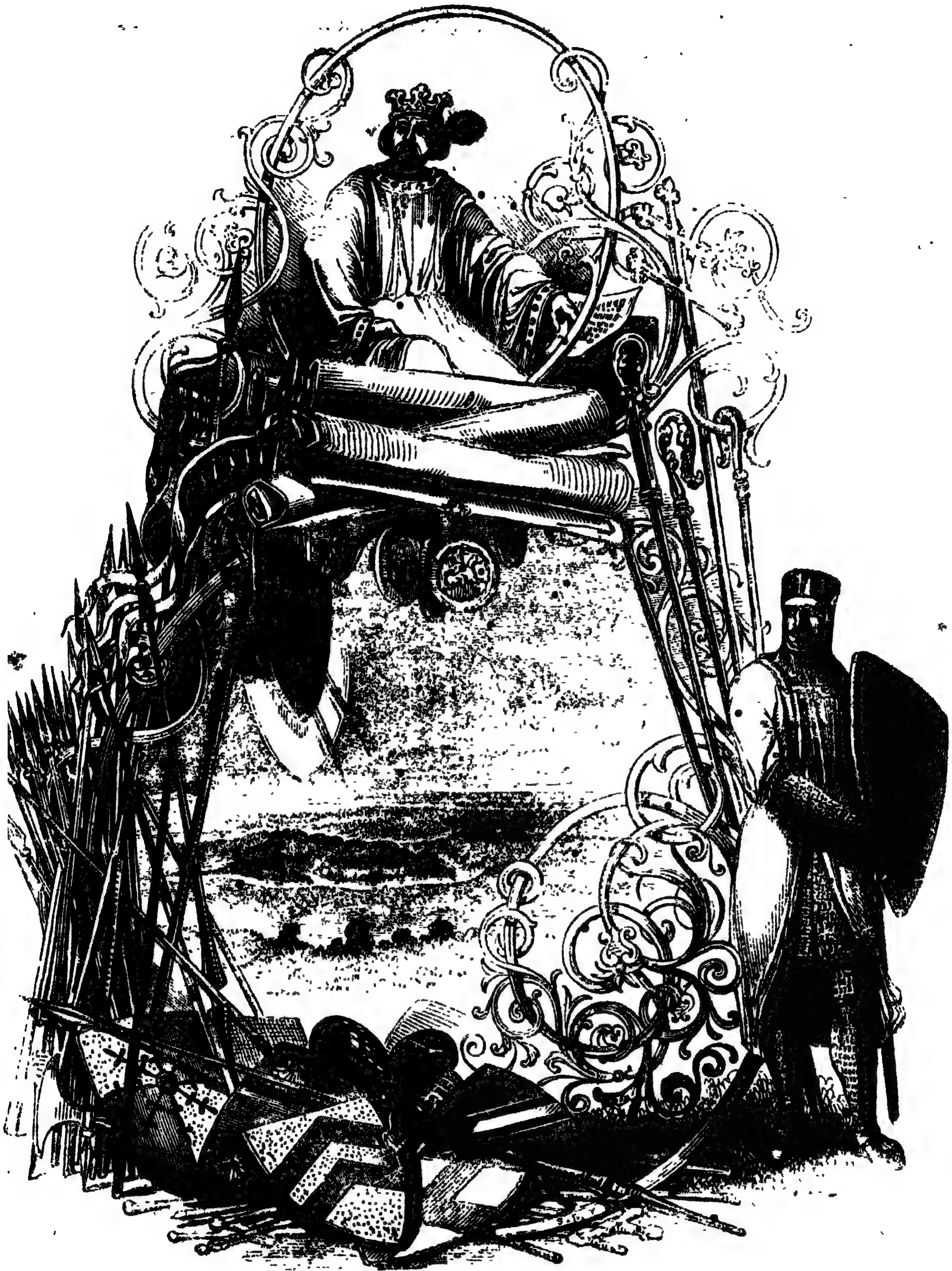
Picture of a Savage.—I observed a native on the opposite bank, and, without being seen by him, I stood awhile to watch the habits of a savage man at home. His hands were ready to seize, his teeth to eat any living thing; his step, light and soundless as that of a shadow, gave no intimation of his approach; his walk suggested the idea of the prowling of a beast of prey; every little track or impression left on the earth by the lower animals caught his keen eye, but the trees overhead chiefly engaged his attention. Deep in the hollow heart of some of the upper branches was still hidden, as it seemed, the opossum on which he was to dine. The wind blew cold and keenly through the lofty trees on the river margin, yet that brawny savage was entirely naked. Had I been unarmed, I had much rather have met a lion, than that sinewy biped; but I was on horseback, with pistol in my holsters, and the broad river was flowing between us. I overlooked him from a high bank, and I ventured to disturb his meditations with a halloo. He then stood still, looked at me for about a minute, and then returned, with that easy bounding kind of step which may be termed a running-walk, exhibiting an unrestrained facility of movement, apparently incompatible with dress of any kind. It is in bounding lightly at such a pace, that, with the additional aid of the waramerah (a short notched stick), the native can throw his spear with sufficient force and velocity to kill the emu or kangaroo, even when at its speed.—*Major Mitchell's Third Expedition into the Interior of Eastern Australia.*

A Finland Farm-house.—After leaving Ofvre Tornea there are no regular post-houses, but the peasants drive to a farm-house. Here is a description of one:—A large fire blazed, that made even the great room uncomfortably warm. Divers trades were going on in different parts of it: in one corner a man was finishing a set of harness; in another, the runners of a sledge were receiving the peculiar curve that distinguishes them in Finland; and a number of lasses, with their shoulders troubled with very little clothing, were keeping half-a-dozen spinning-wheels in constant motion. As soon as they perceived that I wanted a relay, one of the girls put on a little jacket, and, without waiting to button it over her breast, ran to a house a quarter of a mile off to fetch a horse. . . . I entered a few houses where there were shelves on each side of the fire, bearing forty or fifty birch pans filled with cream an inch thick; and they contrive to continue making butter the whole winter through. The houses are not dirty, though the rooms are generally darkened by smoke. In lieu of candles, they use laths of fir planted obliquely in a stand; these give a cheerful but unsteady light, and require replacing every second minute. Although labouring under such disadvantages, both as regards soil and climate, their state is infinitely preferable to that of the Irish. Their habitations are roomy, built of wood, and furnished with glass windows; they themselves are comfortably clothed and industrious.—*Dillon's Winter in Iceland.*

H[illegible] of the Greenlanders.—Like most other savage nations, among whom the gratification of the mere animal propensities is the only inducement to action, the Greenlanders are indolent and listless. Though good humoured, friendly, and sociable, they are seldom lively or inclined to indulge in mirth, and can scarcely be roused from their apathy either by curiosity or passion. They are accordingly little disposed to quarrel or fight; blows or even angry words are seldom exchanged, and they live in great harmony, more influenced by kindness than by harsh treatment. Changeable to an extreme degree, their most favourite projects are resigned on the smallest unexpected obstacles. Endowed with little reach or extent of intellect, their thoughts and cares are almost entirely confined to the present; and they spend their limited stock of provisions without reflecting on future wants, or waste the best season of the year in hunting reindeer for skins to gratify the vanity of their wives and daughters. When not compelled by absolute necessity, they pass whole days in sleep, or sit thoughtful and dejected on some lofty eminence watching the changes of the sea and sky, or forecasting the toils and dangers of the chase. Vanity, both personal and national, seems their strongest passion; unable to estimate the advantages of others, they esteem no people equal to themselves, no title higher than to be a Greenlander. The most flattering compliment they can pay to a stranger is to say, "He is almost as well bred as we;" or, "He begins to be a man," or "Innuit," that is, a Greenlander. A favourite amusement among them is to exhibit caricatured imitations of the Kablunaet, or foreigners. Even those who have been in Denmark prefer their naked sterile rocks [illegible] every other country, and still hardly confess that Europeans are so happy as they; complaining that at Copenhagen there is not heaven enough, and no reasonable degree of cold.—*Edinburgh Cabinet Library.*

One Supreme Power in Japan.—The monarch *de facto* is called the Ziogoon; and *his* time is now occupied by ceremonies and receiving homage; but there is over him a monarch *de jure*, whose title is Mikado, and who is thus described:—

"This nominally supreme sovereign does, indeed, claim to reign by right divine, both as being descended in a direct line from the gods, and as being in a manner still identified with them, the spirit of the Sun goddess, the deity who rules the universe, gods and men included, Ama-terasu-oo-kami, being embodied in every reigning Mikado. Such a claim to despotic power was indisputable and undisputed, as it still is; but some centuries ago, a military chief, rendering his own situation hereditary, possessed himself of the actual authority, under the title of Ziogoon, as vicegerent or deputy of the Mikado, to whom he left the nominal supreme sovereignty, and all his state, pomp, and dignity, a nominal ministry included. In fact, it appears that the autocrat's dignity is now made the plea for depriving him of his power. Worldly affairs are represented to be so wholly undeserving the attention of the successor of the gods, that his bestowing a thought upon them would degrade him, even if it were not actual profanation. Accordingly, no business is submitted to him, no act of sovereignty is performed by him that has not a religious character. He deifies or canonizes great men after death; the Ziogoon taking the trouble of pointing out the dead who are worthy of apotheosis. He confers the offices of his court, a real spiritual hierarchy, and, from their nominal dignity and sanctity, objects of ambition to the princes of the empire, to the Ziogoon's ministers, and to the Ziogoon himself. He determines the days on which certain moveable religious festivals are to be celebrated, the colours appropriate to evil spirits, and the like: and one other governing act, if act it may be called, he daily performs, which should prove him to be, in virtue of his partial identification with the Sun goddess, quite as much the patron divinity as the sovereign of Japan. He every day passes a certain number of hours upon his throne, immovable, lest by turning his head he should bring down ruin upon that part of the empire to or from which he should look; by this immobility maintaining the whole realm's stability and tranquillity. When he has sat the requisite number of hours, he resigns his place to his crown, which continues upon the throne as his substitute during the remainder of the day and night.—*Siebold's Manners and Customs of the Japanese.*



[Magna Charta and its localities. The Portrait of John from the effigy on his tomb at Worcester; that of Fitzwalter (full length) from his seal. View of Runnymede, from an original drawing engraved in the 'Pictorial History of England.' The arms, pennons, &c of the principal barons, and Regal and Ecclesiastical insignia, from MSS. of the period, occupy the remainder of the design.]

LOCAL MEMORIES OF GREAT EVENTS.

MAGNA CHARTA.

If there be one feature of our national history more important than any other, more worthy of our pride and unalloyed gratification, it is the growth of that constitutional liberty which, from a very distant period, occupies so large a portion of our annals. To take arms against oppression may be an act worthy of all honour, and successes in such a struggle are treasured up in the hearts of almost every people; but to have at the same time a clear perception of the principles upon which these successes can alone be solidly based and rendered permanently valuable—to fight not against the tyrant, but his tyranny,—these are honours peculiarly our own, and are among the most interesting evidences of the penetration and solidity of the national character. Without attempting to investigate the origin of this perception of the value of constitutional safeguards, we may say that there can be little doubt it first assumed a definite form in the hands of the mailed Norman-English barons of the thirteenth century, when the Great Charter was wrung from John; who thus by a species of poetical justice

obtained for our Saxon forefathers a new and more enduring liberty than that which the ancestors of those same barons had destroyed in the memorable field of Hastings.

As we have already given in our publication a detailed *history* of this great event, as well as a view of the chief provisions of the Charter,* we shall here confine ourselves strictly to the "memories" with which they are connected. And first, as to the great meeting at St. Edmund's Bury, or, as it is now called, Bury St. Edmund's. This town, named after King Edmund the Martyr, who was crowned here on Christmas-day, 856, is pleasantly situated on the river Larke, in the western division of the county of Suffolk, at a distance of twenty-five miles from Ipswich and seventy-two from London. It presents in its general aspect—its good houses, clean streets, and beautiful promenades—as delightful a specimen of a country town as one would desire to see. To the antiquarian it presents additional objects of interest in the remains of its once magnificent abbey, built to commemorate the martyrdom of Edmund, and which, for the grandeur of its buildings, the splendour of its decorations, and the great privileges and immunities it enjoyed, exceeded every other religious establishment in this country, Glastonbury only excepted. The first stone church of the abbey was begun in 1065. In this edifice, which took twelve years to build, which measured no less than 505 feet in length, and from 212 feet in the transept to 240 feet in the western front in breadth, met, on the 20th of November, 1214, the confederated barons to arrange finally their plans with regard to the king. John had but just returned from France, where his troops and allies had been completely routed at the battle of Bouvines by the army of the French king Philip. Defeat made him more ferocious than ever, his foreign mercenaries were once more let loose upon the country, to riot in the blood and wealth of his English subjects. Every promise the barons had formerly obtained, no matter how solemn the circumstance by which it had been attended, was now violated. Accordingly the barons met at St. Edmund's Bury, and determined to demand their rights in a body, at the ensuing festival of Christmas. Up to the high altar of the sacred edifice—so endeared from its Saxon memories, and therefore so fitting a place for the Norman-descended barons to offer up their solemn vows to carry stedfastly forward the object they had in view for the benefit of universal England—did the barons advance one by one, and in the order of their seniority, and then, laying their hands upon it, swear that if the king refused the rights they claimed, they would withdraw their fealty, and make war upon him, till, by a Charter under his own seal, he should confirm their just petitions. They then parted to meet again at the Feast of the Nativity.

Before we follow their progress any further, let us take a hasty glance at the persons and previous histories of the principal of those brave and enlightened warriors, to whom we owe so much. Robert Fitzwalter, their leader (and who, if we may judge from his portrait in the engraving at the head of this paper, bore that in his lineaments and bearing which stamped him as no ordinary man), was the grandson of Richard Trowbridge, earl of Clare, to whom Henry I. had granted the barony of Dunmow in Essex, and the honour of Baynard's Castle in the city of London. His father, Walter, distinguished himself by his opposition to John in his attempts to seize the crown during Richard's absence from England. His son and heir, who was destined still more strongly to excite John's resentment, was called Fitz-Walter, that is to say, the son of Walter, being the first of his family who appears to have assumed that name. There are two interesting circumstances connecting the personal history of Robert Fitzwalter with the king. In the fourteenth year of his reign, John, in revenge for the share Fitzwalter had taken in the opposition to his arbitrary measures, destroyed Baynard's Castle, and drove its owner and his family into exile. Some time after this, John, being present at a tournament in Normandy, was delighted with the success of one of the knights who fought there on the English side, and whose surprising gallantry was the general theme of admiration: "By God's teeth," he exclaimed, "he deserves to be a king who hath such a soldier in his train," and immediately sent to inquire his name; it was Robert Fitzwalter. John, with a grace and generosity not very common with him, immediately restored the barony, and gave him leave to repair his castles. A still more interesting but less authentic circumstance is thus mentioned by Dugdale: "Robert Fitzwalter having a very beautiful daughter,* called Maud, residing at Dunmow, the king frequently solicited her chastity, but never prevailing, grew so enraged that he caused her to be privately poisoned, and she was buried on the south side of the choir of Dunmow, between two pillars there." His object in poisoning her is stated by other writers to have been to prevent her informing her father (then in France) of his conduct. Whether true or false, this story obtained extensive credence, and Drayton founded two of his heroical epistles upon it.

Robert de Ros, or Furfan, another of the barons, early in life fell under the displeasure of Richard I., then in Normandy, who committed him to close confinement under the charge of Hugh de Chaumont, with especial directions to keep him safe as his own life. Chaumont transferred the charge to William de Spiney whom the prisoner bribed to allow him to escape from his castle of Bonville. De Ros escaped, but Richard made him pay a fine of 1200 marks; and as for William de Spiney, the incensed monarch caused him to be hung. This baron married the daughter of William the Lion of Scotland, and was therefore powerfully connected. For a short time he entered a religious house, giving up his houses and lands to another, but not liking the solitudes of the cell and the cloister, or perhaps stirred by a noble ambition to aid in the great struggle then going on, he soon returned to the world, and resumed his property. Among the other eminent barons, were Gilbert de Clare, first earl of the united baronies of Hertford and Gloucester; Robert de Percy, head of the famous house of that name; Geoffrey de Mandeville, earl of Essex, to whom John had given in marriage his wife Isabel, when he repudiated her on the ground of consanguinity; Henry Bohun, first earl of Hereford; William de Malet, whose ancestor was deputed by the Conqueror, after the battle of Hastings, to see the body of Harold decently interred; and Robert de Ros, whose family was so ancient that Leland deduced it from Noah, taking in Meleager, that slew the boar, and Diomedes, who was at the siege of Troy, by the way. On this point we give our entire assent to the cautious doubt expressed by Banks: "this genealogy appears to be founded on fancy more than truth." De Vere's brother, Aubrey, was on the opposite side, and achieved the not very honourable distinction of being one of John's chief counsellors in the disgraceful doings of that monarch. Such are a few only of the eminent men John saw arrayed against him.

On the Feast of the Nativity the barons set out to meet John at Worcester, but alarmed at the general aspect of affairs, he suddenly quitted that place, and coming to London, shut himself up in the strong house of the Knights Templars. Here, on the Feast of the Epiphany, the barons (who chose a holy day for every im-

* Vol. ii., p. 228.

portant step—a striking proof of the solemn determined spirit that actuated them) presented themselves in such numbers that John was obliged to admit them to an audience. After vainly endeavouring to frighten them from their course, he turned pale, trembled, and changed his tone. "Your petition," said he, "contains matter weighty and arduous. You must grant me time till Easter, that with due deliberation I may be able to do justice to myself and satisfy the dignity of the crown." The barons ultimately agreed to this, and dispersed. John used the interval by courting the church, the people, and by sending a special messenger to the Pope, in which the barons imitated his example.

At the appointed time the barons met at Stamford with great military pomp, attended by a retinue of two thousand knights, and a host of less important followers. From thence they marched to Brackley, within a few miles of Oxford, where the king was. Here they were met by a deputation from the king, to which they delivered a schedule of the chief articles of their demand, saying, "these are our claims; and, if they are not instantly granted, our arms shall do us justice." When John read the schedule, his rage knew no bounds: "but why do they not demand my crown also? By God's teeth, I will not grant them liberties which will make me a slave." The barons now proclaimed themselves "the army of God and of Holy Church," and unanimously elected Robert Fitzwalter to be their general. After an ineffectual attempt to take Northampton Castle (having no battering-engines), they marched to Bedford, where the people threw open the gate to welcome them. The same took place in London: and now, in all parts of the country, the lords and knights quitted their castles to join the barons' standard. John was stupified at the power and array he beheld, and at last sent to assure the barons that, for the good of peace and the exaltation of his reign, he was ready freely to grant all they desired, and wished them to name a day and a place of meeting. "Let the day," replied the barons, "be the 15th of June; the place, Runnymede."

According to tradition, the barons met the preceding evening, to make all necessary preparations, at Reigate Castle, in the neighbourhood, which then belonged to William, Earl of Warren and Surrey, one of the king's party. The precise spot to which the tradition is referred is a cavern under the castle court, called for a long time, perhaps still, "the Barons' Cave."

On the following day, the ever memorable 15th of June, the parties met in the meadow on the banks of the Thames, known, from time immemorial, as a place sacred to great national events, the name, Runnymede, signifying the Mead of Council.* The tents of the king, and of the few barons and great personages who adhered to him, were pitched upon one side, and those of the countless nobles, knights, &c., who were there to dictate terms to their humbled sovereign, on the other. A scroll was then and there presented to John, which he almost immediately signed. Securities also were exacted; the foreign officers were to be sent out of the kingdom; the City of London, for the next two months, was to be held by the barons, and the Tower by their supporter Cardinal Langton: above all, the barons were to choose five and twenty of their number to act as guardians or conservators of the liberties of the kingdom, with power, in case of any breach of the Charter for which redress was not immediately given, to make war upon the king; to seize his castles and lands, always, however, saving harmless his person and the persons of his queen and family. So ended this great day. As soon as John found himself alone among his friends at Windsor Castle, he gave way to the now ungovernable rage and frenzy that possessed him. He cursed the day of his birth, gnashed his teeth, rolled his eyes, gnawed sticks and straws, and appeared to have utterly lost his senses. His foreign adherents, however, soon raised his spirits; messengers were despatched to hire adventurers to come and join the king's standard. Into subsequent events we cannot enter at any length. John soon found himself at the head of an army of foreign mercenaries, with whom he moved to and fro, burning and slaughtering his subjects and countrymen at every step. The barons, in despair of successfully coping with these savage hordes continually pouring into the country, offered the crown to the French king's eldest son, Louis, who speedily landed at Sandwich with a numerous and well appointed army. A few months after John died, and Louis and the confederated barons were opposed by the noble Earl of Pembroke, who, having overthrown the latter at Lincoln, at the battle known as "the Fair of Lincoln," wisely used his victory in attaching the English barons to the standard of the young king, Henry III., by full indemnity for the past. A principle of fidelity, indeed, to the man whom, though a foreigner, they had invited into England, could have been the only motive that kept them so long from joining the royal standard; for Pembroke, as Protector, had already shown his desire to meet their demands in a sincere spirit of concession. Most of the great barons we have before particularised were made prisoners in this battle. We need not follow their history farther than to mention that Fitzwalter subsequently went to the Holy Land; and having distinguished himself at the siege of Damietta, returned to England, and was buried (1235) in the priory at Dunmow;* and that Robert de Ros, after founding the castles of Hamlake in Yorkshire and Werke in Northumberland, became a Knight Templar, and now lies buried in the Temple church. Upon his tomb (a beautiful and very interesting memorial) is a representation of a comely-looking knight in mail and flowing mantle with a kind of cowl; his hair is neatly curled at the sides, his legs are crossed, a long sword is by his side, and a lion at his feet.

* Much has been said about the Charter being signed not at Runnymede, but in a neighbouring island, known as Charter Island. One would have thought the document itself was an unanswerable testimony as to the fact of the case. It concludes with the words, "Given under our hands . . . . . in the meadow called Runnymede, between Windsor and Staines, on the 15th day of June, and in the 17th year of our reign."

* This very same earl is, we believe, the founder of the famous custom at Dunmow of giving a flitch of bacon to any married couple who, after the space of a year, would swear they have never wished themselves unmarried.

THE OCCULT SCIENCES.

(Continued from p 112.)

Alchemy, or the imaginary art of converting the baser metals into gold and silver, is supposed, as the prefix *al* would seem to denote, to have been of Arabic origin. The means by which this transmutation was affected, was the substance termed the philosopher's stone—the grand object of the research and manipulations of the chemical philosophers of the middle ages. The possibility of its discovery was implicitly believed by even some of the greatest geniuses of the time, while its actual possession was boasted of by others of more doubtful reputation. It was a sorry circumstance that the possessor of this source of unlimited riches was but too often clothed in rags, and a mendicant for the necessaries of life; so that with good reason the Italian proverb says, "Non ti fidare al alchemista povero o medico amalato" (do not place your trust in a poor alchemist or

a sick physician). In the thirteenth century alchemy was in a most flourishing condition, enumerating among its professors the names of Roger Bacon, Raymond Lully, and Albertus Magnus. Another object of research was the elixir of life, or universal medicine for the cure of all diseases and the prolongation of life beyond its natural limits. "That medicine," says Friar Bacon, "which could remove all impurities of the baser metals, and change them into the finest gold and silver, could also remove all the corruptions of the human body, to such a degree that life might be prolonged through many ages." There arose in Germany a religious sect about the fourteenth century, which, by the distortion of certain passages of Scripture, gave them an alchemical application; and constituted itself into an order of the Rosie Cross (four red roses arranged in a cross being its sign), and has since attracted much attention in Europe under the appellation of Rosicrucians.

We have mentioned that many learned men of these comparatively dark periods were firm believers in the truths of alchemy, and passed great portions of their lives in the laborious studies and practices its study entailed. Besides Bacon and others, who, contemporaries of the delusion, were the more likely to be led astray by its promises, others in more recent times have professed their partial or entire belief in the narrations handed down to us: this is the case with Descartes, Bergmann, and Van Helmont. The latter says, "I am constrained to believe in the making of gold and silver, though I know many exquisite chemists to have consumed their own and other men's goods in search of this mystery; and to this day we see these unworthy and simple labourers cunningly deluded by a diabolical crew of gold-and-silver-sucking flies and leeches. But I know that many will contradict this truth: one says it is the work of the devil, and another that the sauce is dearer than the meat." Helvetius published a detailed account of a transmutation he himself witnessed, performed at his house by a stranger of "plebeick habit, honest gravity, and serious authority." He calls his book 'The Brief of the Golden Calf: discovering the rarest miracle of nature, how by the smallest portion of the Philosopher's Stone a great piece of common Lead was totally transmuted into the purest transplendent Gold, at the Hague in 1666."

Holding out such brilliant promises, the alchemists could not want protectors and patrons, and accordingly we find various sovereigns taking the greatest interest in their proceedings, nay, becoming operators themselves. This was the case with Pope John XXII., at whose death were found eighteen million florins in gold and seven million in precious stones; while he declares, in his work upon the subject, that he had made two hundred ingots of gold, each weighing a hundred pounds. In our own country two of our greatest kings, Edward I. and III., were great believers and patrons, and Raymond Lully is said to have furnished Edward I. with a great quantity of gold. In 1329 Edward III. issued the following curious proclamation: "Know all men that we have been assured that John Rows and William de Dalby know how to make silver by the art of alchymy; that they have made it in former times, and still continue to make it; and considering that these men, by their art, and by making that precious metal, may be profitable to us and to our kingdom, we have commanded our well-beloved Thomas Cary to apprehend the aforesaid John and William, wherever they can be found, and bring them to us, together with all the instruments of their art."

Alchemy was also much encouraged by Henry VI. In his reign many protections were given to alchemists, to secure them from the penalties of an act of parliament passed in 1403, and from the fury of the people, who believed them to be aided by infernal spirits. After a long preamble stating the advantages and probabilities of success attendant upon the researches of the alchemists, one of these protections thus continues: "We, therefore, confiding in the fidelity, circumspection, profound learning, and extraordinary skill in the natural sciences, of these famous men, John Faucely, John Kirkely, and John Raynay, elect, assign, nominate, and license all and each of them, and of our certain knowledge, and by our authority and prerogative royal, we, by these presents, grant to all and each of them, liberty, warrant, power, and authority, to inquire, investigate, begin, prosecute, and perfect the aforesaid medicine, according to their own discretion and the precepts of ancient sages, as also to transubstantiate other metals into true gold and silver: the above statute or any other statute to the contrary notwithstanding. 'Further we hereby take the said John, John, and John, with all their servants and assistants, into our special tuition and protection."' This commission was confirmed by the parliament in 1456.

Although many of the alchemists were the honest dupes of their own imaginations, yet others were rank impostors and charlatans; and the advancement of modern chemical knowledge has brought to light many of the tricks and stratagems (several very ingenious in their contrivance) they had recourse to in order to deceive. Occasionally, however, they were hardly dealt with, for various princes and nobles, whose cupidity was excited by their representations, imprisoned and tortured them in order to make them multiply gold or furnish the valuable powder for so doing. With how little success need not be mentioned.

[To be Continued.]

Greenland Fishing-Boats.—The only thing in which the Greenlanders manifest much skill is in the structure and management of their boats, the kayak, or boat for one man, and the oomiak, or women's boat, both formed of a light framework of wood covered with seal-skin. The latter is usually about twenty-four feet long and five or six wide, though some are built nearly a half larger. The covering consists of sixteen or twenty seal-skins saturated with blubber and thoroughly dried. Neither nails nor spikes are used in their construction, the whole being fastened together by the sinews of the seal, and their entire strength consists in their elasticity. They are flat-bottomed, and only fitted for a calm sea, as a stiff breeze or heavy swell is sure to capsize or destroy them. The ice is also apt to cut the skin by which they are covered, when the natives repair the damage by stuffing the hole with blubber, or draw them upon the shore and sew a patch on the place, which is soon accomplished, as two persons can easily carry one of them. They are rowed by four or five women, and with a full cargo on board can accomplish thirty miles or more in a day, though on long voyages one cannot reckon on more than twenty or twenty-four on an average, as every fifth day the boat must be taken out of the sea, to allow the skin, now saturated with water, to dry. The former, the kayak, or man's boat, is from twelve to fourteen feet long, about eighteen inches wide, and a foot deep, formed of wood and whalebone, covered above and below with skin, and seldom weighs more than twenty or thirty pounds. In the middle is an opening, surrounded by a hoop, into which the Esquimaux slips, and drawing his seal-skin cloak tight round it, renders the whole completely impervious to water. There is only one oar, six feet long, with a thin blade at each end fenced with bone. In this frail bark he fears no storm, floating like a sea-bird on the top of the billows, or emerging from beneath the white waves that dash over his head. Even when upset, he rights himself by a stroke of his oar under the water; but if this is lost or broken, he is certain to perish. Few Europeans ever learn to row the kayak, and many even of the natives can never attain sufficient skill to regain their equilibrium when overturned.—*Edinburgh Cabinet Library.*

Seek not proud riches, but such as thou mayest get justly, use soberly, distribute cheerfully, and leave contentedly.—*Bacon.*

A DAY AT A LONDON BREWERY.



[Entrance to Barclay's Brewery.]

Those dwellers in and visitors to the "Great Metropolis" who cross Southwark Bridge from the City to the Borough, can scarcely fail to have observed the array of tall chimneys which meets the eye on either side of its southern extremity; each one serving as a kind of beacon or guide-post to some large manufacturing establishment beneath—here a brewery, there a saw-mill, farther on a hat-factory, a distillery, a vinegar factory, and numerous others. Indeed, Southwark is as distinguishable at a distance for its numerous tall chimneys and the clouds of smoke emitted by them, as London is for its thickly congregated church-spires. Let the reader, when next on the bridge, single out from among these chimneys one more bulky, though not more lofty than the rest; and this will point out the spot where one of those gigantic establishments—a London Brewery—is situated; establishments which, whether we regard the extent of the buildings comprising them, the amount of invested capital by which they are maintained, or the systematic arrangements by which the daily operations are conducted, rank among the first in the kingdom, or indeed in the world. Without entering into the chemical niceties which are involved in the process of brewing, or into a history of beer and malt liquors generally, we hope to convey to the reader some idea of the astonishing magnitude of the arrangements and the labour by which a "pint of porter" is produced. We have recently, through the courtesy of the proprietors, been permitted to visit the Brewery of Messrs. Barclay, Perkins, and Co.; and will endeavour to describe the objects and the processes there observed.

On crossing Southwark Bridge to the Surrey side of the water, the bridge-road passes over a narrow street running parallel with the river, to which we descend by a flight of stone steps; and on looking eastward along this street, we observe large ranges of buildings on either side, connected by a covered bridge or passage thirty feet from the ground. These piles of buildings form parts of the brewery; and on approaching the end of the right-hand range, we arrive at another street leading southward, both sides of which are in like manner occupied by the brewery buildings, extending to a distance of several hundred feet. Proceeding southward along this street, we pass under a light and elegant suspension-bridge, by which communication is established between the opposite sides; and beyond this we arrive at the entrance to the brewery, within which are two or three open yards or squares, surrounded by buildings of vast extent. The frontispiece at the head of this page represents some of the principal buildings of the brewery, together with the suspension bridge, taken from a spot nearly opposite the principal entrance. The entrance gate is large and elegant, and fronting it is a building appropriated as offices and counting-houses, where thirty or forty clerks are employed.

Nearly in the middle of the premises is a building called the 'tun-room,' in which some of the processes connected with the brewing are conducted; and from the leaded roof of this building we obtained a panoramic view of nearly all the various parts of the brewery. Towards the north-east, on the river side, is a wharf, from whence beer is shipped for exportation: to the north are two large ranges of malt-warehouses, separated by the street first alluded to, and con

nected by the covered bridge: westward is an open court, containing at various points in its circuit an engine-house with all the steam-engine apparatus, two water-reservoirs for the supply of the establishment, a cooperage, a building where casks are cleansed, sheds for containing empty casks, and various other buildings; southward is a most extensive range of storehouses, where the beer is kept in vats; and beyond these is a range of stables for the dray-horses; to the south-east is the fining-house and some of the storehouses; and, lastly, eastward are the porter and ale brewhouses, connected by the suspension-bridge passing over a street below. Such are the extensive ranges of buildings visible from the elevated roof of the 'tun-room;' the whole covering a space of ground eight or nine acres in area, and from a quarter to a third of a mile in circuit.

The purposes to which these several buildings are applied will perhaps best be understood by following the processes in the order actually observed in the brewery; by tracing the water, malt, and hops through their successive changes, as far at least as may be done without discussing the scientific details of the processes.

The water used for brewing is that of the river Thames, pumped up by means of a steam-engine through a large iron main; the main passing under the malt-warehouses, and leading to the reservoirs in the open court of the brewery. The appellation given to these cisterns reminds us of the fact that every manufacture has its peculiar phraseology, not easily understood by strangers; for when we heard mention made of the 'liquor-back,' it required some explanation to show that this is but another name for 'water-reservoir:' water, in the language of the brewhouse, being 'liquor,' and a cistern or reservoir, a 'back.' The water, then, is conveyed to these cisterns; and we have seldom seen a cast-iron structure present a finer combination of strength with elegance. Fifteen iron columns, each nearly half a yard in diameter, are ranged in three rows of five each; and on the top of these columns is the lower cistern, a cast-iron vessel about thirty-two feet long by twenty wide, and several feet deep. From this cistern rise the supports by which a second one, about the same size as the former, is upheld; and a light staircase leads up from the ground to the upper cistern. The whole structure, reaching an elevation probably of forty feet, is made of cast-iron.

By these means, then, the establishment is supplied with a reservoir of water for brewing, the water flowing into the various vessels from the cisterns by the usual kinds of apparatus; and the importance of these arrangements may be judged from the fact that a hundred thousand gallons of water, on an average, are required for the services of the brewery every day. There is a well on the premises, not far from the cisterns; but the water obtained thence is employed principally, on account of its low temperature, to aid the cooling of the beer in hot weather.

All the pumps by which the water is conveyed from the Thames to the cisterns and from the cisterns to the brewing-vessels, as well as various machinery used in the brewhouse, are worked by a steam-engine situated near the water-cisterns. There are two engines; one of forty-five and the other of thirty horse-power, the larger one of which only was employed at the time of our visit, the other being used when the brewing operations are in less activity. The construction of these engines, and the mode in which power is communicated from them to various parts of the establishment, resemble those generally observed in large factories, and need not claim particular notice here.

Our attention was next directed to the malt, and the means by which it is conveyed to the brewing buildings. On looking from the great brewhouse towards the river, we were struck with the appearance of a string of sturdy porters, each carrying a large sack on his back from a barge at the river side to the malt-warehouses. These men followed each other pretty closely, each one bringing his sack of malt, weighing about one and a half hundredweight, from the barge, depositing the contents in the warehouses, and returning to the barge with the empty sack. If the malt-warehouses extended to the river, the bags or quarters of malt would probably be hauled up by crane and pulley, from the barge lying beneath; but premises unconnected with the brewery intervene, and consequently the services of these malt-porters are necessary. Each man carries his bag of malt into the warehouse, up several flights of stairs, and empties the contents into one of a series of enormous bins or boxes. These bins, which are about two dozen in number, are of such extraordinary dimensions, especially in height, that we may say, without exaggeration, that an ordinary three-storied house,—roof, chimneys, and all,—might be contained and shut up in one of them. They are formed entirely of wood, and are supplied with malt till full; the earlier portions of the supply being introduced at a door half-way up the bin, afterwards closed up.

As the northern malt-warehouse is separated by a street from the brewery buildings, the malt originally deposited there is, when wanted, conveyed from the north to the south warehouse by an arrangement of a very curious kind. At the lower part of the front of each malt-bin is a little sliding-door, eight or ten inches wide and rather more in height, which, when slid upwards, allows the malt to rush out with great quickness: and at these doors another set of malt-porters, such as are represented in the subjoined cut, are employed whenever the malt is to be transferred

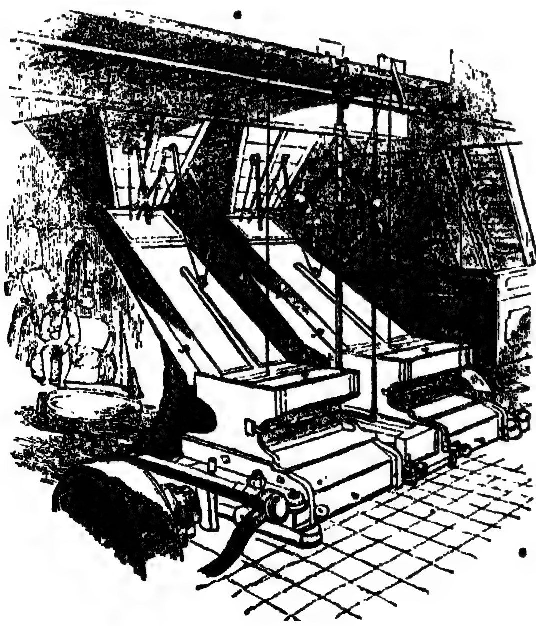


from the north to the south warehouse. Each man brings a basket, covered with leather, and capable of holding about two bushels, to a shelf or stage beneath the sliding-door; opens the latter; fills his basket with malt; takes it on his back by means of a strap held in the hand, and carries it to a large funnel or 'hopper,' into which he empties the malt. In this manner each man will frequently carry four hundred loads in a day, of two bushels each, from the bins to the funnel;

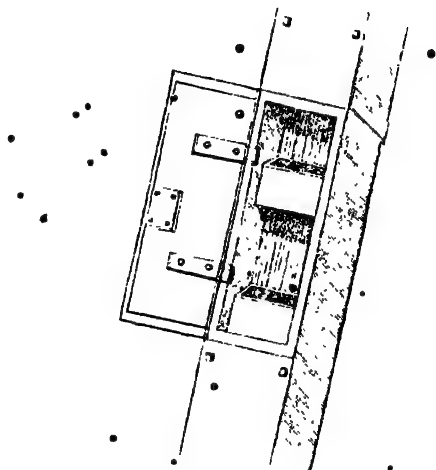
and as all the men deposit their loads of malt in the same funnel, it was natural for us to look to this as the immediate channel of communication. Dipping into this funnel is an apparatus called, in the language of the brewhouse, a 'Jacob's ladder,' consisting of an endless leather band, passing round rollers at the top and bottom, and carrying a series of tin buckets, each capable of holding about two quarts. As the band travels vertically up and down, each bucket in turn dips into the malt, becomes filled, travels upwards to the top of the building, and empties its contents in a canvas cloth; the buckets are thus, in fact, substitutes for porters, each one in turn conveying its two quarts of malt up to the top of the building.

The cloth on which the malt is emptied is stretched across the street from the north to the south malt-warehouse; and to understand its action, we must beg the reader (claiming pardon for the homeliness of the simile) to imagine a jack-towel passing horizontally across the street, and stretched over rollers at the two ends. Each little bucket pours its contents on the upper stage of this towel or cloth, which is called a 'carrier;' and the deposited heaps travel from the north to the south warehouses, the lower stage of the cloth at the same time returning empty in the opposite direction. The covered passage containing this cloth or 'carrier' is that which meets the eye when looking eastward from the Southwark-bridge Road; and it was by this passage that we crossed from the north to the south malt-warehouse.

Having thus traced the malt in its progress from one warehouse to the other, we next watched its preparation for the brewing processes. The malt which had been originally deposited in the bins of the southern warehouse, as well as that which is brought from the northern, is emptied into one common funnel or 'hopper;' the former being brought in baskets by another set of malt-men from the bins, and the latter flowing down a pipe from the endless 'carrier' cloth. From this funnel the malt descends through a pipe into a lower receptacle in the mill or grinding-room, and is taken up by a second 'Jacob's ladder' to a hopper, or receptacle in the upper part of the mill-room, from which it descends into one or other of the grinding (or rather, crushing) machines represented in the subjoined cut. Each of these machines contains a pair of steel rollers rotating nearly in contact, by passing between which the malt becomes crushed into the state called *grist*. This grist may have any degree of fineness suitable for the kind of malt-liquor to be produced, by regulating the distance between the rollers.

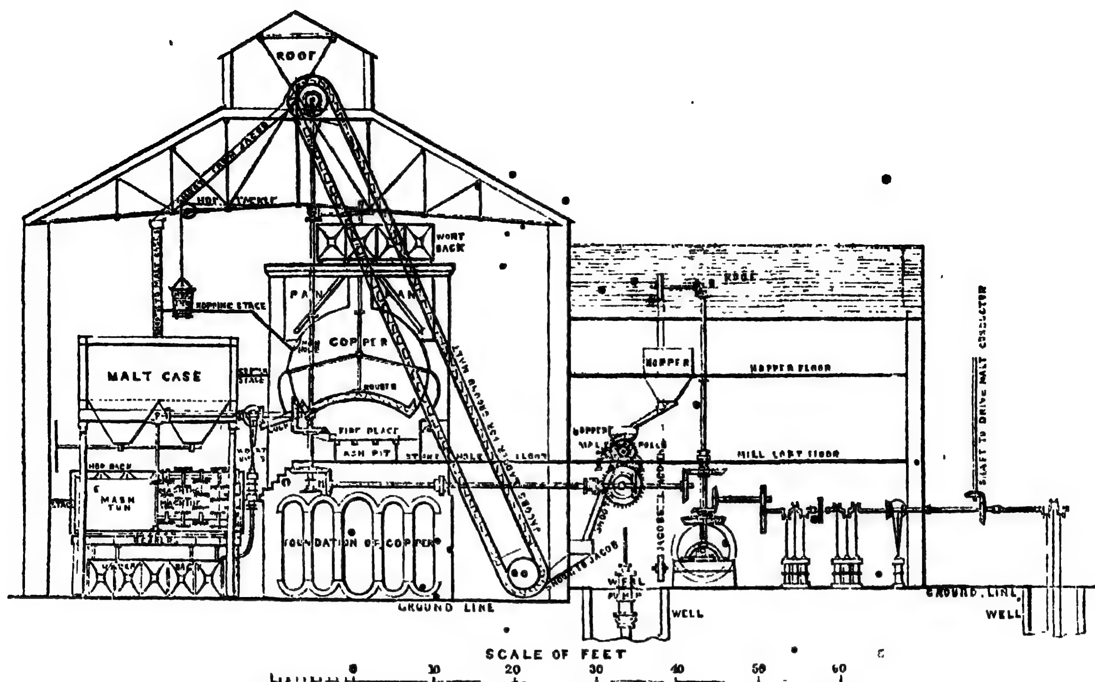


A third 'Jacob's ladder,' much larger than either of the others, carries the grist from the grinding-room to a height of sixty or seventy feet in the middle of the great brewhouse and near its roof; where the grist is deposited in various channels, of which we shall have to speak presently. The stages or layers of these 'Jacob's ladders,' or rather, the ascending and descending ladder, are each enclosed in an iron trunk or case extending the whole length; the ascending ladder having the buckets full, while those of the descending ladder are empty. The subjoined cut shows the appearance of two or three of the buckets seen through an open door in the iron case. The buckets and the endless leather band to which they are attached are set in motion by machinery connected with one or both of the rollers at the ends of the ladder; and when we state that these buckets raise up, on an average of the whole year, more than two thousand two hundred quarters of malt per week (for this is the quantity required for the brewery), it will be allowed that this 'Jacob's ladder' is a most industrious porter.



Of the great brewhouse itself, to which we have now arrived, it is no easy task to give a description. The first effect on the mind of a stranger is a state of bewilderment, which is not removed till matters are viewed a little more in detail. The dimensions of the room are so vast, the brewing utensils reach to such a height, and the pumps, pipes, rods, and other apparatus are so thickly arranged on every side, that unless we follow the actual brewing processes in their regular order, the whole assemblage, to the mind of a visitor, becomes a mass of confusion.

In the first place the reader must imagine a room nearly equalling Westminster Hall in magnitude, built entirely of iron and brick, and uninterrupted by distinct floors or partitions, so as to be open from the ground to the roof, except where stages and platforms occur in various parts and at various heights. The room is lighted by eight lofty windows on the east side; and all round the walls just below the roof are openings for the exit of steam. The principal part of the room is occupied by ten enormous piles of brewing vessels, reaching from the ground to a great height. Without troubling ourselves with detailed



measurements, it will be sufficient to state the average diameters of all these vessels at about twenty feet; and the arrangement of them is as follows:—The piles of vessels are ranged in two rows of five each, occupying the greater part of the length of the room, parallel with the windows. Those nearest to the windows consist of a square iron vessel called an 'under-back' (*i.e.* lower cistern) near the ground; above this a circular vessel called the 'marsh-tun;' above this again a square wooden-box called a 'malt-case;' and, highest of all, a pipe to convey malt into this case. Each one of the set farthest removed from the windows consists, near the bottom, of a large furnace; above this, a copper-boiler enclosed in brick-work, and capable of holding nearly twelve thousand gallons; above this again, a vessel called a 'copper-pan;' and at the top a 'copper-back,' for receiving the wort previous to its being boiled with the hops. These ten piles of vessels, as before stated, occupy the chief part of the brewhouse, but there is also, near each end, a very capacious square vessel, called a 'hop-back,' or 'jack-back.' The pumps, pipes, iron platforms, iron flights of stairs, &c. are very numerous, and distributed in various parts of the building; but they are altogether subsidiary to the large piles of vessels just alluded to.

Let us now see how far it may be practicable to explain, in a brief manner, the purposes to which these huge vessels are applied. To aid the description, we give, at the head of this page, a sectional representation of the principal vessels and working apparatus. The reader is supposed to be looking southward, with the windows on the left hand, and to have before him a vertical section of all the vessels in one of each of the five pairs alluded to above, together with the long 'Jacob's ladder,' and the malt-crushing apparatus in the building to the right of the great brewhouse. Most of the vessels and apparatus have the names attached, whereby the reader, by occasional reference to the cut, can follow the routine of processes.

To begin at the beginning, let us suppose the furnace fires to be lighted. The door of each furnace is opposite the western wall of the building; and a passage leads along the sides of the furnaces, with the furnace-doors on the one hand, and large cellars or receptacles for coals on the other, one in front of each of the five furnaces. These cellars are supplied with coals in a very ingenious manner. The coals, when brought to the brewery, are placed in a coal-yard or court, and from thence are conveyed to another receptacle within the brewhouse. Here a box, capable of holding about two sacks, is filled with coals, drawn up by means of tackle, placed upon a very ingenious railway situated between the wall and the furnaces, parallel to both, and wheeled along till it comes over any one of the five coal-cellars, where it is emptied. The coals required for the brewery, about twenty tons per day, are thus conveyed opposite to the doors of all the furnaces with great ease. The form of each furnace, and the details of its arrangement, do not require particular notice; but it is worthy of remark, that the smoke from all the furnaces enters one large subterraneous flue, which conducts it to a chimney situated in the open court, detached from every other building. This chimney is a fine specimen of brickwork, rising to a height of a hundred and twenty feet, and being, from its bulky area, a conspicuous object from the bridge.

The coppers, which are immediately over the furnaces, are employed in the first place to heat water for extracting the saccharine matter from the malt, and afterwards to boil the malt-extract thus obtained. The water is brought from the large reservoirs in the open court, through pipes, to the 'copper-pan' and also to the copper; and at certain times and in certain quantity is allowed to flow into the copper, where it gradually acquires the temperature proper for the process of 'mashing,' or that by which the extract is obtained from the malt.

All kinds of malt liquor may be shortly characterised as being extracts of malt, boiled with hops, and then fermented; so that the main processes are those of extracting, or 'mashing,' boiling, and fermenting. The water in the copper is for the first of these processes; and while it is gradually heating, the malt is being conveyed to the 'mash-tun.' We have before stated, that the crushed malt, or 'grist,' is conveyed, by a long 'Jacob's ladder,' nearly to the top of the brewhouse. Here the buckets deposit their contents into a small vessel, from which five pipes ramify, each pipe

leading to one of the 'malt-cases.' The top of each pipe has a kind of sliding door or portcullis drawn across it, by the management of which the grist may be made to descend whichever of the pipes may be desired. The malt-case is merely a receptacle to hold sufficient malt for one mashing, until such time as that process is to be conducted, and when this time arrives, four valves are opened in the bottom of the malt-case, whereby the malt speedily falls into the 'mash-tun.' This last-named vessel is circular, and is provided with a double bottom, the upper one of which is pierced with very small holes; the space between the two bottoms is placed in communication with the copper by means of a pipe, and a few large holes, closed with plugs or taps, occur in the lower or true bottom.

This being the arrangement, and the mash-tun being supplied with malt, a proper quantity of water is allowed to flow from the copper to the space between the two bottoms of the tun; and, percolating upwards through the small holes, it mixes with the malt. The malt and the water are then stirred about by means of a mashing-machine set in rotation by the steam-engine; and after this has continued for a certain length of time, the water, which now contains a large proportion of malt-extract, is allowed to flow from the tun into the square 'under-back,' the taps in the bottom being turned on for this purpose, and the holes in the false bottom being too small to allow any of the malt to pass. The liquor thus produced is called 'wort.'

A pump is next brought into requisition, to pump the wort from the 'under-back' into the copper. Here, for the first time, our attention is directed to the hops. Most persons are aware that it is the flower of the hop-plant which goes by the general name of hops, and that this imparts a peculiar bitter, without which beer would not be recognised as such. The hop-flowers are pressed into large canvass bags, and in that state conveyed to the brewery, where they are ranged in large warehouses near the brewhouse till wanted. The bags are hauled up into the brewhouse, conveyed to the upper part of the copper, and the hops thrown in at a door in the copper called the 'man-hole' (this being the hole at which the men go in to clean the copper after each brewing). The wort and the hops are then boiled together, until the flavour of the latter is sufficiently imparted to the former, the hops being constantly stirred by a rotating machine called a 'rouser.'

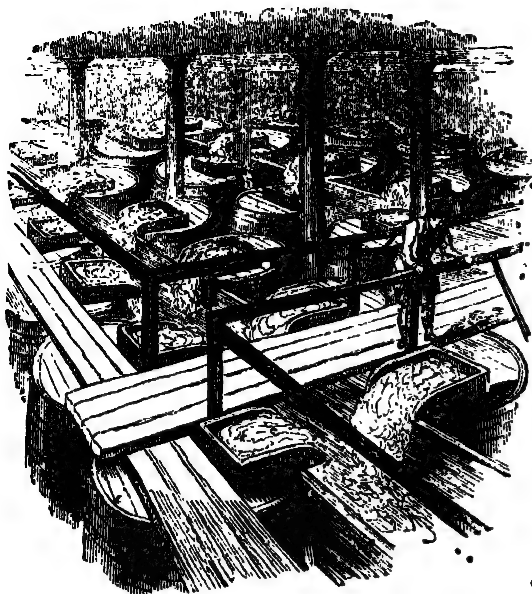
The boiled wort next descends, through a shoot or trunk, from the boiler to a very large square vessel, called a 'hop-back' (almost entirely hidden behind the mash-tun in our section). As the hops as well as the liquid descend through the shoot, the hop-back is provided with a perforated false bottom, through which the wort flows, leaving the hops above the perforation. The capacity of this vessel cannot be less than four thousand cubic feet, and when filled with boiling wort and hops, the clouds of steam rising from the open surface are, as may easily be imagined, most profuse.

The wort is pumped from the hop-back into 'coolers;' but before we follow it in this process, it may be desirable to say a few more words respecting the great brewhouse. Three of the coppers and three of the mash-tuns, with the accompanying vessels, are employed for the brewing of porter, while the others are for ale; one hop-back, too, is for porter, and the other for ale. The fermentable matter obtained from the malt is not all extracted at one time; and, therefore, the 'grist' is covered with hot water two or three times: the extract or infusion each time being called a 'mash.' The hops, in like manner, do not lose all their valuable qualities by once boiling, and are, therefore, used again, in fresh portions of boiling wort. In order to convey the drained hops back again to the copper, a number of men strip off their upper garments, and get into the hop-back, where they shovel the wet hops, still scalding hot, into a tub or bucket, which is drawn up, wheeled along a stage, and emptied into the coppers. This operation has rather an extraordinary appearance, for the men are enveloped in steam, and are moreover liable to severe injury if any of the hot wet hops touch the upper and unclothed parts of their bodies. The hops from the porter-brewing are re-conveyed to the coppers in this way; but those from the ale-brewing are carried up by a 'Jacob's ladder,' which dips at the lower end into the hop-back, and empties the hops into the boiler at the top. When the malt and the hops are thoroughly spent, they are thrown into the street, and thence carted away, the one under the name of 'grains,' to be used as food for cattle and swine, and the other as manure.

Adjoining the western side of the brewhouse are large ranges of buildings, through which the wort passes in the subsequent processes. The first process necessary after draining from the hops is a rapid cooling, which is effected in a manner somewhat striking to a stranger. At the upper part of a lofty building are two spacious cooling-floors, one over another: the sides of the rooms being open for the free access of air. Each floor is of immense extent, perfectly level, and perfectly clean, and exposes a surface of not less than ten thousand square feet. The floor is divided into compartments by raised ledges a few inches in height, and into the compartments thus formed the hot beer or wort is pumped from the hop-back. The surface of the stratum of beer being so very large in proportion to the depth, the air which is wafted over it from the open sides of the room cools the beer in a short space of time. In some particular states of the weather, when the beer is not cooled with sufficient rapidity by these means, it is passed through a refrigerator, in which it is brought into close connection with cold spring water, thus effecting a rapid reduction of temperature.

Our visit next led us into that part of the building where the process of fermentation is carried on. The cool beer or wort is allowed to flow into four enormous square fermenting vessels, technically called 'squares:' and in these wooden vessels, one of which will hold fifteen hundred barrels of beer, the liquid is fermented with yeast for a certain space of time. On ascending a ladder to look into one of these squares, we remarked the singular appearance of the thick masses of yeast covering the surface of the beer, and still more the suffocating fumes of the gas which emanated from it and hovered in a kind of mist over the surface.

We next visited a spacious room called the 'tun-room,' in the lower part of a building, of which the middle story is occupied as hop-lofts and the upper as the coolers just alluded to. This tun-room contains nearly three hundred cylindrical vessels, ranged with great regularity in about twenty rows of fifteen in a row, and each holding upwards of three hundred gallons. These vessels are called 'rounds,' and pipes and cocks are so arranged at the bottom of each as to allow them to be filled with beer from the fermenting squares, at a certain stage in the process. Between the rows of vessels are long troughs, into which the yeast, worked off by the beer through a hole in the top of each vessel, is conducted along a sloping shoot or channel, a mode of arrangement represented in the subjoined cut. This process of working off the yeast is called 'cleansing,' and is important to the future quality of the beer; and although it is a process somewhat dirty and unpleasant in small or domestic breweries, yet here all is clean, regular, and orderly;



indeed this is not the only proof which such an establishment affords, that the large extent of the operations is the very circumstance which leads to cleanly and orderly arrangement, from the absolute necessity of economising room and time.

Sunk in the floor of the tun-room, beneath the 'rounds,' is an oblong tank lined throughout with white Dutch tiles, and intended for the occasional reception of beer. This tank would float a barge of no mean size, being about a hundred feet in length and twenty in breadth.

On proceeding westward through the brewery from the main entrance, all the buildings which we have yet described are situated at the right hand; but we have now to cross to the southern range, separated from the other by an avenue, over which a large pipe crosses to convey the beer from the 'rounds' to the store vats. These vats are contained in a series of store-rooms, apparently almost interminable; indeed all that we have hitherto said as to vastness is much exceeded by the array which here meets the eye. On entering the store-buildings, we were struck with the silence which reigned throughout, so different from the bustle of the manufacturing departments. Ranges of buildings, branching out north, south, east, and west, are crammed as full of vats as the circular form of the vessels will permit; some larger than others, but all of such dimensions as to baffle one's common notions of 'great' and 'small.' Sometimes, walking on the earthen floor, we pass immediately under the ranges of vats (for none of them rest on the ground), and might then be said to have a stratum of beer twenty or thirty feet in thickness over our heads; at another, we walk on a platform level with the bottom of the vats; or, by ascending steep ladders, we mount to the top, and obtain a kind of bird's-eye view of these mighty monsters. Without a guide, it would be impossible to tell which way we are trending, through the labyrinth of buildings and lofts, surrounded on all sides by vats. At one small window we caught a glimpse of a churchyard, close without the wall of the storehouse; and, on further examination, we found that the buildings belonging to the brewery, principally the storerooms, have gradually but completely enclosed a small antique-looking churchyard, or rather burial-ground (for it does not belong to any parochial church). In this spot many of the old hands belonging to the establishment have found their last resting-place, literally surrounded by the buildings in which they were employed when living.

The space occupied as store-rooms may in some measure be judged, when we state that there are one hundred and fifty vats, the average capacity of each of which, large and small together, is upwards of thirty thousand gallons. The town of Heidelberg in Germany, has gained a sort of celebrity for possessing a tun of vast dimensions, capable of holding seven hundred hogsheads of wine; but there are several vats among those here mentioned, in each of which the Heidelberg tun would have "ample verge and space" to swim about. Subjoined is a sketch of one of these large vats, each of which contains about three thousand barrels, of thirty-six gallons each, and weighs, when full of porter, about five hundred tons.



Leaving this array of vats—these silent giants of the brewery—we next visited the ale department, of which little has yet been said. The distinction between ale and beer is well known by the taste, but is not easily described in words: ale is of greater specific gravity, lighter coloured, more transparent, and less bitter than porter. Whether or not we assent to the dictum of Autolycus, in the 'Winter's Tale,' that a "quart of ale is a dish for a king," it is certain that a malt liquor more or less resembling the ale of modern times was much in vogue among our forefathers centuries ago.

It will be remembered that we stated two out of the five sets of brewing vessels are employed for the brewing of ale. These two are at the northern end of the brewhouse, and are used nearly in the same way as the porter vessels. The water is conveyed from the cistern to the copper, and there heated; the crushed malt is introduced, first into the malt-case, and then into the mash-tun; hot water is allowed to flow to this malt from the boiler; the mashing process follows, and the wort, when drained off from the malt into the under-back, is pumped into the boiler; the hops are introduced and boiled with the wort; and, lastly, the whole contents of the copper flow into the hop-back, where the wort is strained from the hops. All this nearly resembles the process followed in porter-brewing; but the hot ale-wort travels by a very different route. We have alluded to an elegant iron suspension-bridge,

which passes over a street from the great brewhouse to a building termed the ale-brewery. Along the bottom or floor of this bridge are laid three pipes, one to convey gas for lighting the ale-brewery, another for cold water from the cisterns, and a third for conveying the hot ale from the hop-back to the coolers in the ale department. This latter structure, nearly fire-proof, is built with much elegance, and consists of the necessary rooms for the completion of the ale-brewing. The hot ale-wort, passing from the hop-back over the suspension-bridge, is conveyed to the top of the ale-brewery, where it is spread out in two cooling-floors, separated, like those in the porter-brewery, into compartments by means of raised ledges, and, like them also, exposed to the free access of air on all sides. The cooling being effected by exposure on these floors, and afterwards by passing through a refrigerator, the ale-wort descends to the story containing the fermenting vessels, which is on a level with the suspension-bridge; and here, in various vessels, some square and others round, the wort ferments, and assumes the state of ale. Again descending, the ale enters the 'tun-room,' to undergo the process of cleansing. About three hundred and fifty cylindrical casks, or 'rounds,' each containing about a hundred and fifty gallons, are ranged in great order throughout this large room; and here the ale remains till in a fit state to be vatted. Once again descending, we arrive at the level of the street, where, passing through a dark spacious store-room, we see immediately over head an uninterrupted range of vats, into which the ale flows from the 'rounds.'

The water conveyed over the suspension-bridge is deposited in a cistern at the top of the ale-brewery, and from thence flows to the various stories as required. Adjoining the southern end of this building are large ranges of store-houses occupied by ale-vats.

We now again cross to the principal range of buildings, and offer a few remarks descriptive of the mode of filling the butts with beer. The butts in which the beer is conveyed to the publicans, and which are so well known in the streets of London, contain one hundred and eight gallons each. An India-rubber hose, similar in form to those which are attached to fire-engines, is connected at one end to a hole in one of the vats, and at the other to the bung-hole of the butt, the latter being placed on the ground with that hole uppermost. Then, by means of a tap or valve governed by a handle, the beer is made to flow from the vat, through the leather hose, to the butt or barrel; and when one butt is in this way filled, the end of the hose is quickly transferred to the hole of a second butt, which is filled in a similar manner. The subjoined cut represents a man engaged at this process of 'drawing-off,' which is effected in cellars on the level of the ground, of which there are several. Some of the store-vats are ranged round these cellars; while those which are at a greater distance are placed in connection with the cellars by pipes and hose.

Most persons perhaps are aware that malt liquors, after fermentation, require a process called 'fining,' to render them more clear and transparent. The liquid with which this is effected is made at the brewery; and on visiting the building where the manufacture takes place, we found that, small as is the quantity required for each butt of beer, the process is conducted on a considerable scale. The building is at the left hand of the principal entrance to the brewery, and consists of three or four stories or tiers, each filled with square vessels, in which the fining liquid (a solution of isinglass and other analogous substances) is prepared. A very small quantity of this liquid is used to every butt of beer.

Westward of the main body of the brewery-buildings



is a large paved yard: looking across which towards the north-west, we espied such an array of butts, puncheons, and barrels, as excited no small surprise. These were not filled with beer or ale, but had been brought empty from the cellars of the publicans, to be repaired and cleansed before again using. One of the most undeviating rules in these establishments,—the golden rule, indeed,—is to observe the greatest cleanliness in every part of the processes: nearly every vessel, large and small, however frequently it may be emptied and filled, and in whatever part of the operations it may be employed, is cleansed after each time of using: according to the nature or condition of the liquid contained in the vessel, so is there a particular mode of cleansing adopted. The butts in which the beer is conveyed from the establishment are especially attended to in this respect. A chimney at the west end of the yard points out the spot where the cleansing or steaming house is situated, and in which the process is conducted in an ingenious manner. The butts or barrels to be cleansed are ranged, a certain number at a time, round the sides of the building, immediately over a horizontal pipe containing steam from an adjacent boiler; and from this pipe a number of jets or short pipes branch upwards, and pass into the bung-holes of the casks, one to each cask.

But these casks are not only cleansed after every time of using, they are also inspected and measured, and if any leakages or injuries appear, the means of repair are at hand. Adjoining the building where the cleansing is effected, a very large cooperage is seen, occupying three sides of a square court. Here we trod our way with some difficulty among casks, old and new,—iron hoops that had seen hard service, and others destined to replace them,—staves of various shapes and sizes,—and all the tools and working apparatus necessary for a cooperage on a large scale.

Under a range of sheds forming part of the circuit of the large open court, are the casks which have either been repaired and cleansed, or are waiting for those operations. There they lie, side by side, one on another, one behind another, in a solid mass of extraordinary extent. Some idea of the number of casks lying here ready to be filled, may be formed from the fact that the whole number of butts, puncheons, barrels, and

similar vessels belonging to the establishment is between sixty and seventy thousand!

It has not formed part of our object to detail the number of hours employed in each part of the brewing processes, nor the particular time of day at which they commence; but the reader will probably suppose that the operations are continued by night as well as by day. The coppers are almost uninterruptedly in use, and relays of workmen succeed each other to attend them. But not only within the brewhouse is activity displayed betimes in the morning; in the open court, long before sleepy London has roused its head, the draymen are busy in hauling up the butts of beer, and placing them on the drays. So many butts are sent out from the establishment every day, and the advantage of conveying them in drays through the metropolis at as early an hour as possible is so great, that by four o'clock in the morning all is bustle and activity; clerks and foremen superintending the operations, and men working the cranes by which the butts are lifted from the cellars to the drays. The form of these drays, of which seventy or eighty are constantly at work, is familiar enough to every Londoner; and we doubt not that the *ears* of many passers-by would be grateful for the addition of springs or some other appendage to the drays, whereby their rattling, shaking, deafening, progress over the paved streets might be in some degree subdued: we believe that something of the kind has been already adopted.

If the brewers' drays are well known in London, what shall we say of brewers' horses? Who ever mistakes a brewer's horse for any other? who, that has ever passed one day in the London streets, has failed to remark these noble but unwieldy creatures,—unwieldy from very strength? And the draymen too: here are specimens of the "physical man!" the horses seem made for the men and the men for the horses; and we can hardly fancy such horses driven, or ridden lady-wise, except by such men. In the course of our visit, we passed round the extensive stables where the horses belonging to the brewery, nearly two hundred in number, are kept. Here were marks of the same well-organized system, the same cleanliness and order, as so many other parts of the establishment present. Southward of the little burial-ground and of the store-buildings is a very large paved court, around which are the stables and subsidiary offices; here, a dwelling-house and laboratory for the veterinary surgeon, under whose care the health of the valuable stud is placed; there, a blacksmith's shop, provided with the necessary arrangements for shoeing horses; farther on, a harness-maker's shop, where necessary repairs to the harness are effected. But the principal of these buildings are, as may be supposed, the stables; one range of which extends nearly three hundred feet in length. A clear passage leads throughout from end to end, the horses being ranged on either side with great regularity; galleries or lofts for provender above them; and an open space for ventilation along the middle of the stables. At one end of the long stable is a building in which the provender is prepared for the horses: a small steam-engine, of five or six horse-power, works machinery by which the oats are bruised or crushed before being given to the horses (a modern practice, productive of much benefit to the health of the animal); and another machine by which the chaff is cut. By an ingenious arrangement, the waste steam from this engine can be directed into a water-trough, whereby any desired temperature may be given to the water which the horses drink.

In our ramble through the brewery, we came to a building where "Barclay, Perkins, and Co.'s Entire" stared us in the face in all shapes, colours, and sizes; some boards higher than they were wide, others wider than high; some flat, some convex; some with gold letters on a green ground, others on red. These were the inscription-boards, so well known in the London streets, and so puzzling to strangers, who cannot conceive what the "Co.'s Entire" means. It appears that in by-gone times, beer-retailers were wont to sell a kind of liquor called half and half, that is, half ale and half 'twopenny,' which had to be drawn from two casks. Afterwards a taste was gradually acquired for 'three-threads,' a compound of ale, beer, and twopenny, which the retailer was necessitated to draw from three casks; a process so troublesome, that it led to the brewing of a kind of beer which should combine the qualities of these three sorts, and which, being drawn entirely from one cask, obtained the name of *entire* butt beer. The circumstances under which the necessity arose have long since passed away; but the term is still retained. The inscription-boards, which inform us whose "Entire" is sold by the publican, are made in the part of the establishment to which we allude above. One shop is devoted to the carpenters who prepare the boards, and another to the painters and gilders who finish them.

Before concluding our necessarily hasty sketch of this vast establishment, we may observe that it is something more than a brewery; it is a memorial of past times, carrying us back to the period when the Globe theatre occupied part of the site, and, later, when Dr. Johnson was domiciled in an apartment over the entrance gate. In Boswell's 'Life of Johnson' there are numerous letters and reports of conversations relating more or less to the brewery; but without entering upon these, we may briefly state how the great lexicographer became connected with this spot.

It appears that in the early part of the last century, the brewery belonged to a Mr. Halsey, who reaped a fortune there, and upon the marriage of whose daughter to Lord Cobham the brewery was sold to the elder Mr. Thrale. Thrale was an active and liberal man, became sheriff of the county, and M.P. for the borough; and died in 1758, leaving his property to a son whom he had educated liberally. This son married a Welsh lady of good family, and, to use the words of Boswell, "although in affluent circumstances, he had good sense enough to carry on his father's trade, which was of such extent, that I remember he once told me he would not quit it for an annuity of ten thousand a year; 'not,' said he, 'that I get ten thousand a year by it, but it is an estate to my family.'" The beer brewed by Thrale at the period here alluded to was about thirty thousand barrels annually, not one-twelfth part of the quantity now brewed in the same establishment, which produces as much as the nine principal breweries did in 1760. In 1765 Dr. Johnson was introduced to Mr. and Mrs. Thrale by Malone; and from that time till the brewer's death Johnson lived almost entirely in their houses, at the brewery and at Streatham. Before the fire at the brewery in 1832, the room was pointed out, near the gate, in which the Doctor wrote many of his most celebrated productions, more particularly his Dictionary. In 1781 Mr. Thrale died, and as he had no sons, the executors, of whom Dr. Johnson was one, deemed it desirable to dispose of the brewery. It was sold jointly to Mr. Barclay and Mr. Perkins, the latter of whom had been the superintendent of the brewery, for the enormous sum of one hundred and thirty-five thousand pounds. Boswell relates: "When the sale of Thrale's brewery was going on, Johnson appeared bustling about, with an ink-horn and pen in his button-hole, like an exciseman; and on being asked what he really considered to be the value of the property which was to be disposed of, said, 'We are not here to sell a parcel of boilers and vats, but the potentiality of growing rich beyond the dream of avarice.'"



[Burke and his Localities.—In the centre a portrait of Burke, from the picture by G. Romney. At top, Westminster Hall, fitted up for the trial of Warren Hastings, painted by Edward Dayes: Burke is addressing the House, and stands at the bar, to the left. At bottom, Beaconsfield House, Burke's country residence, and Beaconsfield Church, in which he was buried.]

LOCAL MEMORIES OF GREAT MEN.

Burke.*

In reviewing the early associations of the life of this eminent man, one cannot but think that Nature had intended him to have achieved his reputation in the pleasant fields of poesy, rather than in the turbulent arena of politics; for not only was he related by the mother's side to one of England's greatest poets, whose Christian name he bore, but being removed at an early age from Dublin, where he was born in 1730, he was left to spend some of the sweetest years of his life at Castle Roche, in the immediate neighbourhood of the old castle of Kilcolman, the residence of that great relative during the period of the composition of the 'Fairy Queen,' and in the very midst of the lovely scenes which that poem, by its scarcely less lovely descriptions, has made familiar to the world. And deep and permanent, undoubtedly, were the effects of these associations on his youthful mind; witness, his early poetical attempts, some of which exhibit more than ordinary ability. But, above all, we owe to those associations, most probably, that deep and powerful current of

* For a sketch of his life, see vol. i., p. 383.

poetical thought and emotion which, in after-life, so characterised all his speeches and writings. To this period and to those scenes, with all their memories and traditions, Burke ever delighted to refer; and among the poetical compositions to which we have alluded was, according to his biographer Mr. Prior, some beautiful verses upon one of the most charming of the localities around Castle Roche, the river Blackwater, which, in its progress to Youghall Bay, receives in its course the Molla or Mulla stream, well known to the readers of Spenser. These verses are lost, unfortunately; but we still possess one of his very earliest compositions, a translation of Virgil's second Georgic, written in his sixteenth year. We transcribe a few lines of this poem, which will give our readers a tolerably good idea of the style and spirit of the whole:—

"Oh! happy swains! did they know how to prize
The many blessings rural life supplies;
Where, in safe huts, from clattering arms afar,
The pomp of cities, and the din of war,
Indulgent earth, to pay his labouring hand,
Pours in his arms the blessings of the land;
Calm through the valleys flows along his life,
He knows no anger, as he knows no strife.
What, though no marble portals, rooms of state,
Vomit the cringing torrent from his gate;
Though no proud purple hang his stately halls,
Nor lives the breathing brass along his walls;
Though the sheep clothe him without colour's aid,
Nor seeks he foreign luxury from trade;
Yet peace and honesty adorn his days
With rural riches and a life of ease."

From Castle Roche, where he received the rudiments of his education (the ruins of the school-room used to be, and perhaps still are, pointed out to visitors), Burke went to Ballytore, in the county of Kildare, a village agreeably situated in the valley through which runs the river Griese, about twenty-three miles south of Dublin. The site of Ballytore was purchased soon after the commencement of the last century by two members of the Society of Friends, John Barcroft and Amos Strettel, for the purpose of founding a colony of persons of that persuasion. It was soon determined that a school of a very superior kind should be established here; and an able and honest member, Abraham Shackleton, was brought from Yorkshire to superintend its foundation and subsequent operations. The reputation of the new school soon spread throughout Ireland, and from that time to the present day has made Ballytore an object of interest. The grand-daughter of Abraham Shackleton was Mrs. Mary Leadbeater, whose poems and other works have made her favourably known to the public. Burke was in his twelfth year when he entered Ballytore. In a debate in parliament on a proposal that no Papist should be permitted to educate a Protestant, Burke referred very effectively to his own personal history at Ballytore school, expressing at the same time in his happiest manner his gratitude to its master. "I have been educated," he said, "as a Protestant of the Church of England, by a dissenter, who was an honour to his sect, though that sect was one of the purest." With Richard Shackleton, the son of the founder, Burke formed a close and continuous friendship: the family still possess a series of letters written by him to Richard Shackleton from the age of fifteen, when he left Ballytore, up to within two months only of his death. No wonder then that this place was, ever afterwards, greatly endeared to Burke; that one of his most cherished pleasures during the turmoil of political strife was an occasional visit to this "happy valley" of his youth.

He now (17[illegible]) entered Trinity College, Dublin, and began to study for degrees, relieving its tedium by joining in the chief sports, intellectual or otherwise, of his fellow-collegians. Thus we find him one of that body of students who took so active a part in supporting Sheridan (the father of the author of the 'School for Scandal'), then manager of the Dublin theatre, in the theatrical riots of 1746, when the house was nearly destroyed, and its owner driven from the Irish stage. We find him also a member of a literary club established in Dublin in 1747, acting sometimes as its secretary, sometimes as its president. An extract from the original minutes of this association give us an interesting glimpse of the future orator:—"Friday, June 5, 1747, Mr. Burke being ordered to speak the speech of Moloch (from the 'Paradise Lost'), receives applause for the delivery, it being in character.' He attended also the meetings of the Historical Society, which was formed about this period, and became very famous. Many of Ireland's most distinguished men of the last century exhibited their talents here for the first time in public. It existed so late as 1815, when it was put down by the heads of the college, on account, it is supposed, of its attention to politics. In Dublin, Burke wrote the poems we have referred to, and commenced his well-known work, the 'Essay on the Origin of our Ideas of the Sublime and Beautiful.' Having been previously enrolled as a member of the Middle Temple, London, he removed thither from Dublin in 1750, in order to keep his terms. But literature and politics soon began to occupy his mind, to the entire exclusion of law, though not to the exclusion of those social enjoyments which became still more attractive in London than in Dublin, as bringing him into contact with more important men. The Grecian Coffee-House was at first a favourite place of resort; where he became acquainted with Murphy, a dramatist and law student, by whom perhaps he was introduced to Macklin and Garrick. Some years later, when his own reputation was established by the publication of the 'Essay,' we find him one of the principal members of the Literary Club established by Johnson, and including, among its other members, Sir Joshua Reynolds and Goldsmith.

During the period of Burke's London life, and prior to his entrance into parliament, he suffered much from ill-health, and on more than one occasion visited Bath and Bristol with a view to recovery. On the recurrence of his malady, in 1757, Dr. Nugent, a fellow-countryman, a skilful physician, and a most amiable man, invited Burke to his house. Here he wooed, not health only, but a bride, Miss Nugent, the daughter of his kind host. They were married, and happily married. Burke used to say "every care vanished the moment he entered under his own roof." On one of the anniversaries of the marriage-day, he surprised her with a piece of prose-poetry descriptive of his idea of a perfect wife, and which was headed—"The Character of ———." His grateful and happy wife could be at no loss to fill up the blank.

In 1761, Burke commenced his public life as assistant to Mr. Hamilton, commonly called Single-speech Hamilton, who had been appointed secretary to the lord-lieutenant of Ireland, and whom he accompanied to that country. Here Mr. and Mrs. Shackleton called on him one day at his apartments in the Castle, and, to their great enjoyment, found him on the carpet romping with his two boys. It is pleasant to find how much of this playful simple spirit will exist in the minds of men where one would least expect to meet with it—in statesmen, whose failing frames and premature grey hairs too often attest the severity of their intellectual and bodily labours; and it is not unworthy of notice, that the higher and truer the genius of the men, the more keen is the zest for such innocent relaxations. Some years after the period just referred to, a gentle-

man wandering towards Harrow came suddenly upon an interesting scene. On the green in the front of a small cottage was its owner, Richard Brinsley Sheridan, surrounded by Fox, Burke, Lords John Townshend and William Russell, &c., all busily diverting themselves in the simplest manner. Among them Burke was the most conspicuous; he was rapidly wheeling round the green one of Sheridan's boys in a small chaise, and it would be difficult to say which of the two enjoyed it the most.

Burke entered parliament on the 14th of January, 1766, having been previously appointed private secretary to the new premier, the Marquis of Rockingham; and but a short time elapsed before he was looked upon as one of its most distinguished members. The greatest event in his political life, so far at least as concerns the display of his own wonderful powers and the estimation in which he was held, was the trial of Warren Hastings. Westminster Hall presented on this occasion a most august scene. The king, with the prelates and the peers of parliament, sat on the judgment-seat. The Commons stood at the bar, headed by Burke, whom they had chosen to guide the prosecution. All the great functionaries of the state were present in their robes and insignia of office. And the accused—as the governor of sixty millions of people, and of a territory as large as Europe—was not unworthy of all this solemn splendour. The trial really commenced on the 15th of February, 1788, two days having been spent in mere preliminaries. Then Burke rose, saying, "he stood forth at the command of the Commons of Great Britain as the accuser of Warren Hastings." He then paused for above a minute, before he commenced the first of that most magnificent series of addresses which electrified alike the judges, the accused, and the spectators, and which in particular parts, where for instance he was describing some of the atrocities perpetrated by Debi Sing, an alleged agent of Warren Hastings, excited the feelings of his auditors to a pitch that we, coldly reading the accounts, can scarcely credit, and so overpowered himself, that the Prince of Wales, for the relief of all parties, moved the adjournment of the House. Had not the trial been allowed to proceed so slowly (above seven years elapsed before it was brought to a conclusion), Warren Hastings could scarcely have escaped a conviction, so tremendous was the effect of these invectives. Pass we now to the last scene of all, Burke's favourite residence, the place where he loved to live, and to which he came contentedly to die.

Beaconsfield is in the county of Berkshire, about twenty-three miles from London. The manor, we believe, still belongs to the descendants of the poet Waller, whose estate it was, and to whose memory there is a monument in the churchyard. Gregories, the seat of Burke, was purchased by him at an expense of about £20,000, the Marquis of Rockingham assisting him to complete the payment. The name of Butler's Court seems to have been given by Burke to the mansion. Here it was that Burke brought Crabbe, then a young man, whom he had relieved from the most absolute destitution in the metropolis, with no other recommendations than a letter, certainly one of the most pathetic ever written, and some poems, which to Burke foreshadowed the reputation of the author of the 'Borough.' Nor did he rest here; as he had already, by obtaining a publisher for the poems, secured Crabbe's reputation, he now sought to fix his pecuniary fortunes on an equally solid basis. He succeeded in introducing the young poet into the church, and then in sending him back to his native place—him, the poor fisherman's boy—with the appointment of curate: an earnest merely of the higher preferment that awaited him. But a few months elapsed before he was appointed domestic chaplain to the Duke of Rutland, through the good offices of his in every sense great benefactor. In 1794 twice did the family grave open at Beaconsfield church—once for Burke's brother, and once for his only remaining son, Richard. Burke himself should then have died. It was a blow that utterly overwhelmed him. "*I am alone*," said he, in one of his letters; "*I have none to meet my enemies in the gate*." He had hitherto much enjoyed the beautiful scenery of the neighbourhood, he had also taken much interest in farming operations. But all this was now at an end, he could not henceforward bear the sight of the place which seemed to have robbed him of his son. A dreadful change took place in his appearance. Three years after, Beaconsfield appeared to him under a different aspect, but he came then to join that beloved son; he expressly said in one of his letters, that he was going thither to die. Even the very day seemed to be known to him; for, some hours before his death, he busied himself in sending messages of affectionate remembrance to absent friends, in declaring his forgiveness of all who had in any manner injured him, and desiring a similar forgiveness for himself. He then again reviewed the motives of his conduct in various public emergencies, expressed his thoughts on the then alarming state of the country, gave some private directions concerning his decease, and lastly, his entire business with the world being concluded, caused some of Addison's papers on the immortality of the soul to be read to him. He was thus engaged when the dread shadow passed over him; after a brief struggle, he expired. Six days after, he was buried in Beaconsfield churchyard. Seldom has funeral been more magnificently attended. In his will he desired that no other memorial of him should be provided than a simple inscription on the flag-stone, or on a tablet to be erected on the wall of the sacred building. Such a tablet accordingly we find, and on it is inscribed, "Near this place lies interred all that was mortal of the Right Honourable Edmund Burke, who died on the 9th July, 1797, aged 68 years." Mrs. Burke long survived him, continuing to reside here till her death in 1812. Some time prior to this she sold the estate for 38,500*l*., reserving its use for life. In the year following the house was accidentally burnt to the ground. We cannot better conclude this paper than by a character of its object, which, though brief and in a shape not generally considered the most fitting for a summary of a great statesman's life, remains to this hour unequalled for its truth and comprehensiveness, as well as for its wit:

"Here lies our good Edmund, whose genius was such,
We scarcely can praise it or blame it too much;
Who, born for the universe, narrow'd his mind,
And to party gave up what was meant for mankind.
Though fraught with all learning, yet straining his throat
To persuade Tommy Townshend to lend him a vote;
Who, too deep for his hearers, still went on refining,
And thought of convincing, while they thought of dining:
Though equal to all things, for all things unfit,
Too nice for a statesman, too proud for a wit;
For a patriot, too cool; for a drudge, disobedient;
And too fond of the right, to pursue the expedient:
In short, 'twas his fate, unemploy'd or in place, sir,
To eat mutton cold, and cut blocks with a razor."

THE OCCULT SCIENCES.

[Concluded from p. 120.]

The evil which has resulted from the pursuit of these 'occult sciences' has not been entirely unmixed. Discoveries in astronomy have resulted from the observations of the astrologers: from the search for the philosopher's stone has resulted also the discovery of several valuable chemical compounds and the invention of

much useful apparatus; while more than one useful medicine has been introduced by those who were searching for an imaginary elixir. But it must be remembered that any good which may have thus sprung from these researches is merely accidental, and that we cannot but congratulate ourselves that in our own day the attention, abilities, and time of philosophers are turned to objects less alluring to the imagination, but infinitely more certain in results. But we must not flatter ourselves that belief in these matters is merely a matter of history. M. Denis states (in an excellent article in the 'France Littéraire,' to which we have referred in preparing this paper), that so late as 1826, a woman was burned at Dax for witchcraft, while about the same period a venerable prelate was denied burial at Spires, because public report accused him of magic. In our own country and our own day, have we not seen multitudes pinning their faith to a new weather-prophet, and a city company employing a philosopher of no mean reputation to prepare astrological predictions. Is not a 'wise man' still often consulted by our peasantry in rural districts? Is not the horse-shoe still nailed up as a protection against the power of witches? Are not amulets still worn, and how many people are there yet who will never commence any undertaking of the least importance on a Friday? "These things prove," says M. Denis, "how much the minds of the people yet require to be enlightened, and what a bad effect the hawking books of fortune-telling and witchcraft produces in the provinces. Of all the means we can employ to remedy this state of things, the proper instruction of the lower orders is the most efficacious: elementary instruction in physics and physiology would indeed do much."

Judicial astrology, or the art of foretelling future events by the inspection of the stars, seems to have been practised from very remote antiquity. It is generally supposed to have originated with the Chaldeans, and to have been thence transmitted to the Egyptians, Greeks, and Romans. The Jews, after their captivity, became much addicted to it; while the Romans, after they had conquered Egypt, conceived so passionate a love for the science of astrology, as to defy all the edicts of the senate issued against its professors. Neither astrology nor astronomy seemed to have been known to the northern nations of Europe until introduced to its acquaintance by the Moors of Spain and the Crusaders. The Mohammedans have always been great astrologers. Once introduced into Europe, the study of and belief in the science spread rapidly and extensively, not merely among the illiterate and vulgar, but among some of the brightest spirits of their respective periods, who indeed usually pursued the study of astronomy only inasmuch as it was subservient to the purposes of astrology. No important events were undertaken without consulting the astrologers, and their predictions were looked to with hope or fear as the case might be, but never with doubt. Thus Catherine de' Medici is said to have always consulted astrologers before any important undertaking; and at one time there was scarcely a prince or even great baron in Europe who did not keep an astrologer in his retinue to cast the horoscopes of his children and foretell future events. The predictions of the astrologers were for the most part couched in artful and general terms, and when they ventured to be too precise, they brought sometimes great discredit on their art: thus, in 1186, all the great astrologers of Christendom agreed that on the 18th of September of that year a most dreadful storm would sweep away whole cities, and would be followed by pestilence and wars of a most destructive character. The Moorish astrologers of Spain, however, disputed the accuracy of the prediction. Baldwin, Archbishop of Canterbury, ordered a solemn fast for three days in order to prepare for the calamity. All Europe was in consternation; but on the arrival of the much-dreaded day, it proved unusually serene and calm, and the season which followed was mild and healthy: and there were no storms all that year (says Gervase of Canterbury) but what the archbishop raised in the church by his own turbulence. Friar Bacon was a great adept and believer in astrology, and imputed the various calamities which befel Europe in 1264 to the neglect of its predictions. He says, "Oh, how happy had it been for the church of God, and how many mischiefs would it have prevented, if the aspect and qualities of the heavenly bodies had been predicted by learned men, and known to the princes and prelates of those times! There would not have then been so great a slaughter of Christians, nor would so many miserable souls have been sent to hell." Even down to the beginning and middle of the seventeenth century, almost numberless works upon the subject of astrology, some of them requiring great industry and patience for their production, continued to appear, although the influence they exerted became chiefly confined to the lower classes of the community.

Economy.—Mere parsimony is not economy. Expense, and great expense, may be an essential part in true economy. Economy is a distributive virtue, and consists not in saving, but in selection.—*Walker's Original.*

The Plains of Hungary.—We had heard much of the dull and monotonous character of the great plain of Hungary. We had now a veritable specimen of it before us: for many long and weary miles we drove, ere so much as a cottage made its appearance, and all the while the corn waved on either hand, rank and luxuriant. Yet, singular as to us this state of things appeared, it is but a copy, and an imperfect one, of what prevails elsewhere. There are parts of the country, especially in the great plain of the Theiss, where you may travel an entire day without encountering either the houses or the faces of men; and all the while your route will be through fields loaded with abundant crops of wheat and rye. Moreover, the customs of the people who occupy that plain are to the full as striking as the external appearance of the country, and it may be well if I describe them. The long and fierce wars which Hungary sustained with Turkey, and the exposure of these open districts to perpetual invasion, first induced the inhabitants to congregate into heaps, and the habits then contracted have never since been laid aside. Accordingly, there are no such things as villages and hamlets, far less detached dwellings, to be seen anywhere; but, at remote intervals one from another, you come upon towns, towns of the veriest huts, where dwell six, eight, ten, and sometimes as many as thirty thousand peasants together. How they preserve order among themselves I do not know, for their magistrates seem to possess little influence over them; yet they do live peaceably enough; and though all are poor and squalid, and filthy to a degree, there seems to be a perfect indifference to the evils which poverty and squalor bring with them. They are to a man agriculturists. It is by the labour of their hands that the boundless plains through which you have travelled are cultivated; and the process by which the mighty operation is performed is this:—When the season for ploughing and sowing comes round, the males march in a body from their homes. They erect wigwams, or huts, here and there in the fields; and then setting to work, they toil from Monday till Saturday, living on the provisions which they may have brought with them, and sleeping at night in their bivouac. On Saturday they all return to the town, and do not leave it again till Monday. In this manner the first processes are carried through; and when all the seed has been scattered, the people march back to their permanent habitations, there to abide in idleness and filth till some fresh operation becomes necessary. Finally, when harvest is ready, the bivouac is resumed, the women coming forth this time to assist in getting it in. And as the completion of the sowing season sent them back to town, so, when reaping ends, the huts are abandoned.—*Gleig's Hungary.*



[The Red Deer, or Stag and the Roe-Deer.]

THE DEER OF THE BRITISH ISLANDS.

[Concluded from p. 106.]

The red-deer, or stag (*Cervus Elaphus*, Linn.), belongs to the Elaphine section of Col. Hamilton Smith, and is to be distinguished from the fallow-deer, not only by its horns, which are very different in their form, but also by its superior stature. It is undoubtedly a native of the British Islands, and its range extends over the whole of Europe, the high northern latitudes excepted, and advances into the proximate districts of Asia. Desmarest says that it exists in the north of Africa, and he also gives Abyssinia as one of the native localities of the fallow-deer. Africa, as far as it is ascertained, presents us with only two species of deer: of these, one species, very different from the fallow-deer, is allied to the red-deer, but is at the same time distinct; it inhabits the northern line of coast (Barbary); the other is allied to the fallow-deer, and is perhaps identical with it. Cuvier says that he has received the fallow-deer wild (un daim sauvage), from the woods to the south of Tunis. We are not aware that either the red or the fallow deer has been seen by late travellers in Abyssinia.

The stag delights in extensive forests and unenclosed hilly districts, where he can enjoy a vast range of pasturage. Hence there are only a few places in the British Islands where this fine species wanders truly wild and unrestrained. These are the Grampian chain of mountains, and other parts of Scotland,—the New Forest in Hampshire, and various parts of Ireland. In the Grampians they exist in numerous herds; in the New Forest, however, which was made by devastating the country, in order that the red-deer might multiply, very few are now to be seen. Wolmer Forest in Hampshire, formerly abounded in red-deer, and when Queen Anne visited it, as she was journeying on the Portsmouth road, the keepers, as White in his 'Natural History of Selborne' tells us, drove a herd of five hundred head before her. During subsequent years they were reduced to fifty head, and in White's time the whole were caught and conveyed to Windsor Park. A few red-deer, Mr. Bell informs us, existed in Epping Forest within the recollection of persons living, and in some parts of Gloucestershire the relics of once large herds are said still to linger.

During the winter the males and females of this deer associate together, and form herds of variable numbers which wander in quest of pasturage. In February the males lose their horns, and shortly afterwards others begin to grow; they then retire from the general herd, and remain alone. The paring season is in August, and during this time, when two males meet, they engage in most furious contests; they utter a loud tremulous

bellowing, and attack persons unwarily approaching their lair with great impetuosity. The throat or anterior part of the neck of the stag at this epoch is singularly swollen, and the whole system is under the highest excitement. In quest of the hinds they swim across broad rivers or lakes; and are said even to venture the passage from island to island along the coast of the Scottish Highlands. The female, or hind, goes with young eight months and a few days, and produces only one at a birth. When about to bring forth, she retires from the herd, and selects a place of concealment, in which her progeny remains until able to follow her, when she joins the rest of the hinds, each of which is accompanied by her fawn or calf. The hind is bold in the defence of her offspring, and defends it with great courage against enemies: having no horns, she uses her fore-feet, and is capable of overpowering a dog, and perhaps even a single wolf. "Some fellows," says White, "suspecting that a calf new-fallen was deposited in a certain spot of thick fern, went with a lurcher to surprise it; when the parent hind rushed out of the brake, and taking a vast spring with her feet close together, pitched upon the neck of the dog and broke it short in two."

The young remain with their parents during the whole of the summer; in the winter the stags join with them; in spring a general separation takes place, the young ones forming companies by themselves.

The acquisition of horns by the male, or stag, is analogous to their acquisition by the fallow-deer. The first year produces no horns, but only the frontal protuberances or bossets for their future support. These are merely rounded knobs. In the second year a simple *stag* or stem is produced. In the third year a longer stem is formed, and this is garnished with a branch, or brow-antler. In the fourth year a still greater development takes place, and, in addition to the brow-antler, a second near the extremity of the shaft, and termed the bez-antler, is acquired. In the fifth year another antler, called the antler royal, is added. In the sixth year the crown, or surroyal, diverges, consisting of two or three snags, and to these, in future years, others are added; the total number of branches often amounts to ten in a stag seven or eight years old, and sometimes even more. While young, and before the protuberances of the frontal bones have appeared, the male is called a calf,—as is also the young female. When the protuberances have grown, the male is termed a *knobber*. In the second year he is called a *brocket*; in the third year, a *spayad*; in the fourth, a *staggard*; in the fifth, a *stag*; in the sixth, a *hart*, or a *stag of ten*.

A stag, or, to use the language of the "honourable science of venerie," a hart, in the fulness of maturity, with his head carried high, and surmounted by finely-developed horns, is indeed a noble object. The ease and freedom of his movements, his proud bearing, and the animation which glances in his full dark eyes, his impatience of a rival, his boldness in the combats, the beauty of his form, his strength and fleetness, combine to render him worthy the pencil of a Landseer or the poetry of a Scott.

That the stag should have been accounted the first and noblest of the "beasts of venerie" by our chace-loving ancestors, and by the barons of the feudal times, cannot surprise us: his swiftness and his gallant defence, when brought to bay; his intrepid reception of the dogs; his sudden and impetuous rush upon his assailants, rendering the termination of the pursuit a welcome opportunity of displaying personal prowess,—gave him such favour in the eyes of the nobles, that it was deemed less criminal in the peasant or man of low degree to commit murder, than to kill a stag. The severity of the forest laws enacted by the early Norman kings, and the recklessness with which they afforested whole districts,—villages, hamlets, cottages, and churches, being all demolished,—attest at the same time their passion for the pleasures of the exciting chase, and their indifference to the welfare of the peasant population of the land,—serfs and villains,—whose interests or lives were not for a moment to weigh against the pleasures of a king.

Desmarest says that the stags of mountain districts, where food is in less abundance, are always smaller than those tenanting the plains, which are covered with a fertile vegetation. This observation is confirmed by a remark of Dr. Johnson ('Journey to the Western Highlands of Scotland'), who, in reference to these animals found in the Isle of Skye, says, "The stags of the mountains are less than those of our parks or forests, perhaps not bigger than our fallow-deer. Their flesh has no rankness, nor is inferior in flavour to our common venison."

The same learned writer adds, "These are not countries for a regular chase. The deer are not driven with horns and hounds. A sportsman with his gun in his hand watches the animal, and when he has wounded him, traces him by the blood. They have a race of brindled greyhounds, larger and stronger than those with which we course hares, and those are the only dogs used by them for the chase." A more dry and prosaic description of Highland deer-stalking cannot be imagined.

As, however, we are not of the class of sportsmen, and have never witnessed the scene, we shall not attempt its delineation. To most of our readers animated descriptions of this kind of chase are familiar, and all are acquainted with the account of the great hunting-match in 'Waverley.'

A full-grown stag is about four feet in height at the shoulders; the general colour is reddish-brown in the summer, with a dark dorsal mark and pale haunches; in winter, the general colour is deep brown. The duration of its life, which has been by many overstated, is from thirty to forty years. Desmarest and other naturalists describe a small variety, peculiar to Corsica, with a thick body, short legs, and a brown fur. The stags of Ardennes are said to exceed in size the ordinary race.

When England was less cultivated than at present, another beautiful deer tenanted the hilly parts and the wild mountain-ranges, whence it has long been banished. We allude to the roe-deer (*Cervus capreolus*, Linn.), a species very common in various parts of the Continent, but in our island now restricted to the mountains of Scotland.

This deer, which belongs to the Capreoline section, is much smaller than the fallow-deer, and its horns are very different to those in either the latter or the stag; they rise perpendicularly from the head, and are short; they are forked at the tip, and have a small antler from the main stem, directed forwards. There are no lachrymal sinuses; the muzzle is naked; the tail extremely short.

The roe-deer is most gracefully formed, and is remarkable for its activity and fleetness. It delights in bold mountain districts, well covered with heath, amidst which it conceals itself from its enemies; and is wary and cautious in the highest degree. So exquisite is its sense of smell, that it perceives a man while yet at a great distance, and it is, consequently, difficult for the sportsman to approach it within gun-shot. When roused by the hunter, away it bounds, leaping among crags and rugged places, with the agility and precision of the chamois of the Alps, or the klipspringer of the rocks of Southern Africa. It uses the most subtle artifices to elude pursuit, returns upon its steps, crouches among the heath or fern, listens and

snuffs the air, and again bounds away. A river is no impediment; the roe crosses it with ease, and, favoured by the difficulties of the locality, it seldom happens that it can be taken by dogs.

These animals may, however, it is said, be deceived by the sportsman, if he quietly watch for them near their usual tracts with a piece of lighted peat, which prevents him from being perceived by the creature's smell; while it produces no alarm, as the roe is accustomed to it. "The roe," says Mr. Tytler, as quoted by Mr. Bell, "is never known to turn on its enemy when wounded; but bad wounds are sometimes received from its horns while it lies tossing its head in agony. It is very active, and I have seen one bound, without much apparent effort, across a road twenty feet wide. Their usual pace, unless when hard pressed, is a long and rather awkward canter; but when closely hunted or suddenly startled, their bounds are the most rapid and beautiful that can be conceived. They often come down on the corn-fields and peas in the neighbourhood of their haunts, feeding entirely in the grey of the morning and evening. The usual method of killing them is to drive the wood with hounds and beaters, the shooters being placed so as to command the tracks or passes; and caution is necessary to avoid the windward side, as the roe will not approach if it smell the enemy. This sport is very tiresome; and a much more exciting mode is to walk quietly through their haunts in the earliest dawn, and endeavour to get within shot of them, which, however, is by no means easily effected."

The roe, in one of its habits, differs in the most remarkable manner both from the red and the fallow deer. The males of these, as is well known, attach themselves at certain seasons to several females, from which they afterwards separate; but the roe is strictly monogamous: a pair mate themselves together, and continue associated during life, never separating from each other, and evincing great mutual attachment. The pairing season is November, and the female goes five months and a half with young, and brings forth one or two at a birth: when there are two, these are said to be male and female, and to mate themselves for life. The female conceals her young amidst the tangled herbage of brakes and thickets, and watches over them with the greatest solicitude: when able to follow her, which they do in about a fortnight, she joins her companion, and the family continue united till the ensuing November. Sometimes it would appear that two or three families, consisting of the parents and their young, unite; for, according to Mr. Tytler, their couches, which are often found among the heather, indicate that a party of six or seven had lain there together. They make their couch by scraping off the heather, and crouch like hares, which animals they also resemble in keeping to the same tracks on their way to their feeding-places. They are also observed to stop occasionally and listen, especially if they hear any sudden noise, and then canter quickly onwards. The cry of the roe is frequently heard at night upon the hills where the animal is common: it is a short sharp note, between the bleat of a sheep and the bark of a dog. They are in the habit of answering each other; and, when all is still, they may be heard at a great distance. In Scotland the fox is their principal enemy, and destroys many of the fawns. On the Continent, both the fox and the wolf prey upon them.

The male roe loses his horns in autumn, and not, like the stag, in spring; he regains them at the commencement of winter, their completion taking place before November, and more rapidly, as might be expected from their small dimensions, than in the stag or fallow-deer.

During the first year the fawn has only the small frontal prominences developed. The second year a single snag is produced. The third year brings an increase in the size of the horn, and the addition of a sharp branch which is directed forwards. In the fourth year the horns are still larger, and fork at the top. The fifth and the sixth years add only to their size and their roughness.

The roe lives twelve or fifteen years: its fur is subject to a variation in colour, from a greyish or yellowish brown to a reddish-brown or dusky-black: the under parts are pale, or dirty-white; the haunch-mark, a spot on each side of the lips, and the chin are white; the ears are long, the inside is furnished with long white hairs. The height of the adult male at the shoulders is about two feet.

The dusky-black variety is said to prevail at Lunebourg in Saxony.

The flesh of the roe is in little estimation; it is dry and insipid, and destitute of fat; it is, however, eaten on the Continent, where we have several times tasted it. How Bewick can say that it is fine and well flavoured, is beyond our conjecture.

The wildness and timidity of the roebuck renders the attempt to familiarise it difficult, even when the animal is taken young. At this early age it is, moreover, extremely delicate: Dr. Johnson says that in the Isle of Raasay, which, unlike Skye, is destitute both of deer and roes, attempts had been made to introduce the latter, but without success, in consequence of the difficulty of rearing the young, and the impossibility of taking the old alive, or without injuring them.

The roe does not exist in Russia; an allied species, however, considerably superior in size, equalling, if not exceeding, the fallow-deer, inhabits the mountains of Russian Tartary, near the Volga, and is very similar to our roe in its habits.

In concluding our notice of the British deer, we may observe that the fallow-deer is the only existing species (granting Cuvier to be correct as to the animal from Tunis) with which we are acquainted; but fossil relics prove that others inhabited Europe at a former period. Of the Elaphine group, besides our stag, we may number the wapite of America, the Barbary stag, and two or three species inhabiting the Nepal range of mountains. Of the Capreoline section, we only know the roe and the 'Chevreuil de Tartary,' *Cervus paygargus*, Pallas. This group is represented in America by the brockets, or Mazama section, peculiar to that continent.

FISH USED AS FOOD IN AMERICA.

[From a Correspondent.]

Fish, not fresh, but salted or dried, is an article of which the Americans seem to be peculiarly fond, if a correct opinion can be formed from the large quantities consumed, and from there scarcely being a family where fish does not form, at least during a great part of the year, no inconsiderable portion of their daily food; and in many families this is the case from one end of the year to the other. The fish that I am alluding to in that country consists principally of salted (pickled) shad and mackerel, and dried cod, salt herrings being scarcely ever seen or heard of, though they are sometimes caught along the Atlantic coast; and another sort of fish, called the fresh-water herring, abounds in the great lakes and the rivers communicating between them, though they are seldom eaten except during the spring months. Were salmon abundant, in a dried or pickled state, I doubt not but it would be a favourite; but for many years these fish have been getting scarcer in nearly all the rivers belonging to the United States; and hence when any happen to be caught and brought to the city markets, they invariably command a price that precludes the

possibility of their finding their way into the interior of the country, and to the tables of the working classes.

At the period when the United States first became frequented by Europeans, many of the rivers abounded with salmon, but very few are now found. For instance, the Chesapeake Bay and the rivers therewith connected, scarcely more than a century ago could boast of an abundance of salmon; while a few of the rivers to the southward even of the Chesapeake were not wholly destitute of them. The Philadelphia and New York rivers (the Delaware and Hudson) were formerly well supplied with those fish, but this is by no means the case now; and the scanty supply of salmon in the markets of both these cities, for the most part is derived from the waters of the extreme north-eastern part of the Union. Thus do these fish appear to have been receding northwards from river to river; but the rivers of our colonies, particularly the St. John's river and the St. Lawrence, can still boast of a good supply of this prince of fishes.

Regarding some of our own rivers, I am aware that circumstances have arisen, principally the introduction of steam and the establishing of various sorts of manufactories, which tend to make those rivers no longer a favourite resort of salmon, as well as of several other sorts of fish. But in hardly a single instance has the same thing occurred to an equal extent in America; for though it may be true that there are numerous steam-boats plying upon several of their rivers, for the most part the rivers are of so great a breadth, that it is scarcely probable a few steam-boats daily passing up and down channels of so great a width would be sufficient to frighten the fish away from haunts to which they had long been accustomed.

Shad, the *Clupea Alosa*, or large species of herring, in the absence of salmon, appears to be the favourite fish with the Americans, particularly with the people of the middle and eastern states; although black bass (when in season) is by some persons considered superior to shad, but being caught only in particular situations connected with the bays and inlets of the sea, its greater scarcity, no doubt, enhances its value; whereas shad, during the spring months, abounds in most of the rivers and creeks connected with the ocean. These fish leave the shallow parts of the sea near the mouths of the rivers early in spring; for after the first spring freshets (floods) have subsided, shad-fishing in the fresh waters immediately commences. The fish are then in excellent condition, for at that time they are not quite ready to deposit their spawn; and the day they first make their appearance in the markets of the principal cities is so anxiously looked for, that exorbitant prices are frequently given. Of course the prices vary from year to year, being in a measure regulated by the quantity of fish early in the market; but in Baltimore, Philadelphia, New York, and Boston, two dollars (about 8*s.* 3*d.*) are frequently obtained for a shad of good size, that is, one weighing from four to five pounds; and, in the course of two or three weeks afterwards, fish of similar size and quality may often be purchased for a sixth part of that sum. The shad of America commonly range from three to six pounds, but the chief portion of those that are salted down in barrels average from three to four pounds. By the time these fish have ascended far up the rivers, they lose much of the fine flavour and richness for which they are so esteemed on their first leaving the sea; nevertheless they are still held in high repute by the inhabitants of the inland parts of the country; and when they happen to be caught far inland in larger quantities than the people of the neighbouring towns and villages can consume, they are sent off in small light waggons, and peddled through the distant settlements; and though they may not be found in the most perfect condition, yet shad is so exceedingly popular a fish with most Americans, that there is but little difficulty experienced in disposing of a few waggon-loads in almost any populous settlement. It is, however, in the vicinity of the bays and estuaries that these fish are caught in very large quantities, and where the fishermen make a business of curing them as an article destined for the internal commerce of the country. When they ascend far up the rivers, they are generally caught with hook and line; but where the rivers are large, nets and seines of different kinds are employed in fishing for shad.

The finest shad that frequent the English rivers are universally admitted to be those caught in the Severn, some of which are larger than any I recollect having met with in any part of America.

Mackerel, too, are found along the coasts of North America, and at one period of the year considerable attention is paid to mackerel-fishing; yet very few of these fish are used fresh, but are salted and cured, like a portion of the shad, and transported in barrels to every section of the country. The chief part of the consumption of both salt shad and mackerel takes place in the inland parts of the country, where, during the greater portion of the year, there is hardly a village storekeeper who does not trade away (to make use of an American expression), among the settlers in his neighbourhood, more salt-fish than any other commodity he deals in. And here it should be remembered, this vast consumption of salt-fish takes place in a country where animal food is exceedingly cheap. It is not only at the tables of the mechanic, artisan, and tradesman that you daily meet with salt-fish at the breakfast-table—and frequently at the supper-table too—but also among the settlers generally, or among the class of persons that in England would be considered the agricultural portion of the population. Neither have religious fasts and observances anything to do with this almost universal use of salt fish, since there are but comparatively few of the inhabitants, if we except a portion of that class of persons usually denominated the American-Irish, who are in the habit of denying themselves the use of animal food on feasts and fast-days. It must be admitted, however, that the backwoods farmer of America acknowledges *one* dish as equal, if not superior, to all the salt-fish in the universe, and that is pickled pork. But since pork is such a general and especial favourite nearly throughout the entire length and breadth of the country, it frequently happens that the settler's pork-tub becomes exhausted long before his next supply of hogs is ready to replenish it; when, instead of resorting to beef, mutton, and veal to supply the deficiency, salt shad, if he can afford it, or else salt mackerel (which is rather cheaper), in a great measure is made to supply the place of pork.

At the village and roadside taverns the same mode of living is pursued; and there a whole mackerel or the half of a shad is often found the leading article at the breakfast-table where two or three persons sit down in company. There are many other things to be found in the domestic economy of the Americans that differ as materially from our English household arrangements as the prevailing taste for salt-fish in America exceeds anything of the kind existing among ourselves, which can only be hinted at at present. But it ought to be borne in mind, that the peculiarities I have referred to, and designated as American, are nearly as common in our own North American colonies as in the United States themselves, at least in most of the older settled parts, where it would often be an exceedingly difficult matter to draw a distinction between the manners, tastes, and customs of our colonial subjects and those of the American nation.



[Spanish Beggar-Boys.—Murillo.]

GRATUITOUS EXHIBITION OF PICTURES.

THE DULWICH GALLERY

The picture from which the above wood-engraving, by Mr. Jackson, is taken, forms deservedly one of the greatest attractions of the Bourgeois Collection at Dulwich College. Indeed, amongst the number of this Spanish artist's works which are in England, it would be difficult to find one that has attained a greater degree of popularity. From his early youth Bartolomé Estevan Murillo delighted in the delineation of familiar life, and more especially in those of peasants and beggar-boys. Persons acquainted with the peculiar cast of features of individuals of those classes in Spain, are instantly struck with the amazing fidelity with which the painter has transferred to his canvass the peculiarities of expression observed in the mixed race of the Spaniard and the Moor.

The subject under notice requires at our hands a very small share of description, seeing that it at once and directly appeals to the senses, and not to the imagination of the beholder. The group consists of two boys, sometimes, in the catalogues, called peasants, and at other times described as beggars, one of whom seems to be preparing to play, or having successfully played, at a game, the exact name of which we do not at this moment remember, but which consists of batting or bowling a ball through a ring of iron placed upright in the ground. The other boy is standing by, eating a piece of bread, with apparently a considerable degree of sulky satisfaction, whilst a dog, of a large Spanish breed, looks wistfully up into the face of his ragged master. The artist for such a choice of subject has produced that which every spectator will at once admit to be a master-piece of painting in the quality of expression, and which no cultivated mind can contemplate without being struck with the intimate and minute knowledge possessed by Murillo of the true principles of his art. With respect to the former, it is manifest that the boys he represents are of a stamp partaking greatly more of the animal than the intellectual being; yet the lying figure is that of

a creature possessing a large fund of natural and exuberant drollery. There is fun marked in every line of his face, whilst the contrast afforded by the loutish looker-on serves to render still more prominent his exhaustless fund of animal spirits.

The management of the picture is of that class which he adopted in the school of Juan del Castillo, namely, a large proportionate quantity of black and blue-black tints, the other darks consisting of deep rich brown, with very little or rather no unmixed colour, the flesh being painted with an exquisite fidelity to nature; and, in order to afford a scale by which the propriety of the relative strength of the light and dark may be tested, the artist has introduced into two or three places very bright touches—for instance, on the bread protruding from the mouth of the standing figure, and on the teeth of his whimsical companion.

Admitting that this class of painting is not the highest, though with a vast number of persons it will be the most attractive, it is impossible not to see that the work we are noticing is, in all respects one of the most perfect examples of the class to which it does belong. The painter has, with a rare exercise of discrimination, afforded us a specimen of the lowest life, yet has offered nothing in it offensive to humanity or repugnant to good taste. In short, we are disposed to agree entirely with an anonymous writer on the Bourgeois Collection, high as the praise he bestows undoubtedly is, when he speaks of this picture as "a miracle of successful art, and as a work beyond all praise and price."

Of the history of the painter it is only necessary to say that he was born on the 1st of January, 1618, at Seville, and not at Pilas, as stated by Palomino Velasco. He showed an early inclination for painting, and was placed under the care of a maternal uncle, Don Juan del Castillo, a painter of some eminence, who had established an academy in Seville. After quitting the school of that master, he painted many pictures which were exposed for sale at the fair annually held in his native city, and a great number of which were exported to Spanish America, a circumstance that has induced some of his biographers to assert that he himself visited South America. Murillo had a great desire to travel to Rome, but on making a journey to Madrid he paid his court to Velasquez, then in the height of his reputation and influence, who found him ample employment in copying from the pictures of Titian, Rubens, and Vandyke, in the royal palaces. After remaining at Madrid three years, he returned to Seville, and immediately enjoyed a very great degree of fame. His first great work, in fresco, or, in other words, on undried plaster on the walls of the convent of San Francisco, or the Capuchins, established his reputation as an historical painter. The work consists of sixteen compartments, the chief of which, and that which was considered by the painter himself as his master-piece, is a representation of St. Thomas of Villanueva distributing alms to a group of poor people. He died at Seville, on the 3rd of April, 1682, that event being accelerated by a fall from a scaffold whilst painting in the church of the Capuchins at Cadiz. In stating the dates of Murillo's birth and death, we have adopted those given by M. Pérriès, in the 'Biographie Universelle,' though Mr. Bryan, following probably Velasco, states those events to have respectively happened in the years 1613 and 1685.

Although it is manifest from the later works of Murillo that he deeply reflected on the principles which guided the great masters of the Italian schools of painting, there is in no single instance the slightest appearance of the servility of imitation. He has pre-eminent claims to be considered in all respects, as the founder of an original style. In his imitation of nature too, without abandoning a scrupulous fidelity of representation, he has so managed to invest his figures, in subjects such as the one before us, with a chasteness of expression which elevates the work in some degree into the class of poetic composition, without at the same time sacrificing the truth of history. In fact, when he depicts a Spanish beggar-boy he does not give us the mere portrait of one individual member of that class, but places before us in the individual represented a personification of the whole class itself. Such we conceive is his merit in the subject of which we have been speaking, but the converse in some degree of this view must be taken in relation to his Scripture subjects. In these he paints life as he sees it in Spain, not as it existed in Palestine. The Madonna, from his hand, appeals to us as a beautiful sample of Andalusian nature, and not, like the sacred emanations of Raffaelle's pencil, the very impersonation of divine purity. Still his style is in all respects distinguished by a close and lively imitation of nature, whilst his forms have a national peculiarity of air, habiliment, and countenance, It has been justly remarked that his features of the Virgin, his saints, and even his representations of the Redeemer, are stamped with the features of his country, and a characteristic expression of the eye which is remarkable.

It does not appear that he aimed at any great academic truth in his drawing, but would rather seem to have been satisfied with such models as presented themselves to his notice, carefully, however, avoiding manifest defects, and never falling into the delineation of monstrosity or contortion, unless, as in his picture of St. Thomas of Villanueva, the subject imperatively called for such exhibition. "His colouring," observes Mr. Bryan, "is clear, tender, and harmonious; and though it possesses the truth of Titian and the sweetness of Vandyke, it has nothing of the servility of imitation. Though he sometimes adopts a beautiful expression, there is usually a portrait-like simplicity in the airs of his heads, in which there is seldom anything of the ideal. His style may be said to hold a middle rank between the unpolished naturality of the Flemish and the graceful and elegant taste of the Italian school."

EXHIBITIONS OF MECHANISM AND MANUFACTURED PRODUCTS.

THE SOCIETY OF ARTS.

The pleasure which most persons experience in viewing the portrait of a great man, of one who has made for himself a reputation by great thoughts or great deeds, may be traced to the association which is immediately established between the picture and the merits of the person whose lineaments it represents. The personal appearance of the individual, and the skill with which the painter has represented it, do indeed attract a certain share of our attention; but the mind involuntarily turns from the picture itself, to the thoughts or deeds with which the original is associated.

So it is with models of machinery, when viewed in a right spirit. As mere collections of wheels and axles, levers and pinions, there is to most persons something irksome about them; but when regarded as memorials of social advancement, as engines of national wealth, as indices of the progress of scientific knowledge, they rise to the importance of historical monuments, by which future ages may test the rate of progress of the present and the past.

If machinery be regarded in this light, there are many places in London where a profitable hour may be passed in the inspection of machines, engines, and tools whereby certain processes are effected, and of raw materials in certain stages of their progress. The

mechanic, who is practically engaged in any branch of art, may perchance reap advantage from the inspection of a machine different from those he employs; while the general visitor may gather much curious and interesting knowledge respecting the production of articles with which he is daily surrounded.

The Museum of the Society of Arts is one of the places to which we have alluded. This admirable Society was established about the middle of the last century, for the purpose of encouraging British art and manufactures by various means. The funds of the Society are chiefly appropriated to the presentation of rewards or premiums to individuals who have produced anything new or valuable in mechanical or agricultural processes, or in the instruments by which they are effected. An humble individual may make a useful discovery, but may not have the means of profiting by it through the protection of a patent: to afford such a man the means of publicity for his invention, and to give him, under certain regulations, a small reward for his ingenuity, are among the objects of the Society. The models which the Society receives on many such occasions, as well as specimens of culture and of manufacture, models, and instruments received from other persons, have gradually accumulated to a considerable number, and form a museum. The Society's house is in John Street, Adelphi; and the museum occupies one apartment on the ground-floor. No charge is made for admission to view these objects; but still, for obvious reasons, a visitor is expected to bring an order from any one of the members (who are very numerous): with such an order a stranger may be admitted any week-day except Wednesday.

There is nothing attractive in the appearance of the room which contains the models and machinery; indeed persons unused to these subjects might deem it scarcely better than a lumber-room; but a little steady attention to the contents will show the liberal objects which the Society has had in view. Almost the first articles seen on entering the room are specimens of Leghorn plat deposited in a glass case. Our female readers who are conversant with the qualities of 'Leghorn,' 'Tuscan,' 'Dunstable,' and other materials for bonnets, well know how large a price has been generally paid for foreign plats, compared with English. Now the Society has paid great attention to this subject, with the view of improving, so far as their influence and encouragement can do so, the quality of the English straw used for this purpose, the permanence of the colour, and the mode of platting, in order to raise the quality of the home manufacture as nearly as possible to the level of that of Italy, and thereby provide employment for the numerous families in the midland counties of England who are engaged in the straw-plat manufacture. In the glass case to which we allude are specimens of English 'Leghorn,' in a great variety of forms, placed in juxta-position with an Italian plat. This is the fair and legitimate mode of maintaining a home manufacture—not by prohibiting the importation of foreign goods, but by improving our own; and to aid in this improvement is the enlightened object of the Society of Arts.

In another case are specimens of hemp and flax of different qualities, resulting from attempts made to improve the culture of those valuable materials. We may observe that the Society has paid especial attention to the encouragement of those branches of agriculture and insect-rearing whereby the raw materials of manufactures are produced both in England and in the colonies. As examples, we may mention that in one case are bottles containing different specimens of Assam tea, grown in the north-east district of Hindustan, as an attempt to show how far we could be supplied with tea from our own colonies; in another are specimens of Assam silk, brought from the same country; in a third are specimens of silk-worms' cocoons, containing silk wholly produced in England. In all such instances as these, the commercial advantages or disadvantages likely to result from the success of the respective attempts are left to develop themselves at the proper time, the object being to ascertain, by the influence and encouragement of the Society, whether, and by what means, such and such things *can* be cultivated, of good quality, in England or her dependencies.

In different parts of the room are models of the apparatus whereby fibrous materials are worked up into cloth, as well as specimens of the cloth thus produced. Specimens of wool, taken from various kinds of sheep and goats, are exhibited, as well as pieces of broad-cloth woven therefrom. Lace, made in the old method by hand, under the designation of 'pillow-lace,' is placed in juxta-position with other specimens produced by other means. Then there are numerous models of looms for producing various kinds of woven fabrics, some of them almost obsolete in form, but still serving to mark the steps by which progress has been made. Indeed one of the chief points of interest in this museum arises from the contrast often exhibited between models of machines made in the last century and others of modern date: they are like facts in the history of a nation, showing how the present has been derived from the past.

Among the models seen in the room are many relating to improvements in ship-building, such as in the formation and fixing of the rudder, and so forth. Others show us various forms of rafts which have been devised for the preservation of life in case of shipwreck; and of fire-escapes, for use in the public streets: among the latter is a model of Mr. Wivell's ingenious machine. A pair of scales and a set of weights, brought from Belgium, enable us to compare the forms of the weighing apparatus used in that country with the kinds employed in England. Wind-gauges, rain-gauges, tide-measures, and telegraphs, of some of the numerous forms devised, are represented by small models deposited here; as are also lathes and hand-tools of many kinds.

Whatever is calculated to lighten or relieve human labour or human pain, by the substitution of mechanism, is a prominent subject for the consideration of this Society. The substitution of machines for climbing-boys, in the process of cleansing chimneys, is an object which has led to the construction of many pieces of mechanism, specimens of some of which are to be seen here. There is another glass case, containing some pieces of mechanism, which can scarcely be looked at without calling up a feeling of regret at the obstinacy with which injurious customs are sometimes adhered to: we allude to the magnetic mouth-pieces for needle-grinders. The men employed in grinding the points of needles are among the most short-lived of our artisans, on account of the fatal effects of the particles of steel inhaled by the lungs. To obviate this evil, an ingenious person contrived a sort of magnetic shield for the mouth, by which the particles of steel were stopped and retained before they could reach the mouth. But the men refused to use this apparatus, lest, by making the occupation less injurious, more persons might embark in it, and the rate of wages (which is high) be diminished!

Among the most pleasing pieces of mechanism at the museum are those for teaching blind persons to read, to write, and to learn music. Tablets of different kinds are provided with pins and wires, the admixture and arrangement of which are made to denote the letters of the alphabet, the numerals, the notes of the gamut, &c.

Models of agricultural machines are rather nume-

rous, and comprise various forms of ploughs, narrows, &c. For subjects more strictly mechanical, there are specimens of girders for roofs; presses for book-binders and other artizans; planes and other tools; sash-frames, and numerous others; all being models of machines containing some improvement, more or less important, on the usual forms. A few models of safety lamps show the principle on which Sir H. Davy founded his admirable contrivance, and the minor improvements made by others. A collection of apparatus belonging to the associated sciences of electricity, galvanism, and magnetism is interesting, not as showing the state to which they have now arrived, and which is far beyond the point which this apparatus indicates, but as exemplifying the steps by which the progress has been made.

The Society does not confine its operations to the encouragement of any art or manufacture in particular, but to the advancement of productive industry generally, whether in the raw material to which manufacturing art is afterwards to be applied, or to the implements or processes by which this manufacture is conducted. The preparation of pigments, of oils, of varnishes, of cements, and other substances used in the arts, comes therefore legitimately within the scope of the Society's notice; and some of the cases in the museum contain bottles and packages exhibiting specimens of such articles, distinguished either for their excellence or for the improved mode in which they were prepared.

These few paragraphs will serve briefly to show what are the objects for which the museum was established, and what is the general description of articles deposited there. A person who is either unacquainted with the nature of machinery and implements, or is indifferent to the processes of manufacturing industry, may perhaps fail to reap either pleasure or profit from such an exhibition; but he who rightly appreciates the true sources of a nation's greatness and wealth will feel a pleasure in viewing specimens of the apparently humble means by which that wealth and greatness have been principally acquired; and will also duly respect those who by their influence and liberality have aided in improving those means.

The true prop of good government is opinion; the perception, on the part of the subjects, of benefits resulting from it; a settled conviction, in other words, of its being a public good. Now, nothing can produce or maintain that opinion but knowledge, since opinion is a form of knowledge. Of tyrannical and unlawful governments, indeed, the support is fear, to which ignorance is as congenial as it is abhorrent from the genius of a free people.—*Robert Hall.*

Female Labour in Arabia.—I saw several females here literally performing the labour of bullocks—in plain English, they were yoked to the plough. One was a very comely lass, and she answered my inquiries laughingly, that they hired themselves for the purpose, the remuneration being a small quantity of grain! The men at the same time were standing looking on, with spinnets in their hands. An odd transfer of duties this! The reader may recollect that Sir Thomas Munro relates, as a reason why an Indian should be exempted from paying his taxes, that he pleaded the late loss of his wife, who did as much work as two bullocks.—*Welsted's City of the Caliphs.*

The Mikado of Japan.—Everything about him must be incessantly new. No article of his dress is ever worn a second time; the plates and dishes in which his repasts are served, the cups or bowls out of which he drinks, must be new at every meal, as must the culinary utensils in which the meal is prepared. But none inherit his leavings. Whatever article of any kind has been hallowed by the Mikado's use, even such remote use as cooking what he is to eat, is thereby so sanctified, that no human touch must be afterwards suffered to profane them. To wear his cast clothes, to eat off his plates, cook in his saucepan, &c., or even to feed upon the broken victuals from his table, would call down the vengeance of heaven upon the sacrilegious offender. To prevent all risk of the kind, everything that has once been in any way employed in the service of the Mikado is immediately torn, broken, or otherwise destroyed; his clothes, which are of a colour that no other person may wear, are burnt; and hence arises the only drawback upon all this state. The Mikado is supported by the Ziogoon; and the allowances from Yedo not being as ample as might be wished, the heavy expense of renewing daily, almost hourly, whatever appertains to the Son of Heaven, is alleviated by supplying his wardrobe, table, kitchen, &c. with articles of the very cheapest, and, therefore, coarsest description.—*Siebold's Manners and Customs of the Japanese.*

A Hungarian Gentleman's Establishment.—The gentleman whose guests we had thus unexpectedly become, belonged to that class in Hungarian society which corresponds, in respect to rank, with our untitled aristocracy—the proprietors of estates which have descended to them through many generations. He inhabited a country-house, which, in point of size and the general aspect of things in and around it, I can compare to nothing so aptly as the dwelling of a Highland laird. It was a long-fronted, two-storied, white-walled château, having before it a sort of court or grass-plot, round which ran a gravelled drive, that was fenced off from the road only by a hedge and paling. At the bottom of this court, again, and at right angles with the swing-gate by which we entered, stood a range of cottages, where dwelt the grooms and menials and hangers-on upon the family; while just across the road were stables, coach-houses, sheds, barns, and a garden well stocked with fruit and vegetables. Of park, or paddock, or grounds purely ornamental, there was, however, no trace. Except where the green court lay (and it was not wholly ornamental, inasmuch as the draw-well stood exactly in the centre of it), every rood of land had been laid under the plough. Up to the very walls of the mansion the corn crops were growing; and in the hamlet where we and our host first met, the labourers or serfs by whom they were reared resided. It was not, however, in the outward appearance of things alone that I traced a close resemblance between the domicile of this Hungarian gentleman and that of the Highland laird, rather, perhaps, as he was half a century ago, than as you now find him, except in rare cases. The family of Mr. Scultati (for so my young friend was called) appeared of countless extent. There was no end to the retainers, men, women, and children, who went to and fro before his hall-door and thronged his kitchen. Eating and drinking, moreover, appeared to be a work which suffered small intermission; and the viands, though coarse perhaps, were most abundant. Then, again, I saw one woman arrive with several couples of fowls, another with a basket of eggs, a third with a jar of milk, a fourth with something else; and I learned that such were not so much the spontaneous offerings of a good-will, as the feudal perquisites which the chief claimed, and the cottar and small tenant paid. "It is thus," said my kind host, "and thus only, that the hospitalities of such a household as mine could be kept up. These things are brought to me every day. What could I do with them, if I did not feed the people whom you consider so numerous?"—*Gleig's Hungary.*

Indian Thieftakers.—The hired watchmen are generally of these castes (thieves), and are faithful and efficacious. Their presence alone is a protection against their own class; and their skill and vigilance against strangers. Guzerat is famous for one class of people of this sort, whose business it is to trace thieves by their footsteps. In a dry country a bare foot leaves little print to common eyes; but one of these people will perceive all its peculiarities so as to recognise it in all circumstances, and will pursue a robber by these vestiges for a distance that seems incredible. One was employed to pursue a man who had carried off the plate belonging to a regimental mess at Caira: he tracked him to Ahmedabad, twelve or fourteen miles; lost him among the well-trodden streets of that city, but recovered his traces on reaching the opposite gate; and though long foiled by the fugitive's running up the water of a rivulet, he at last came up with him, and recovered the property, after a chase of from twenty to thirty miles.—*Mr. Elphinstone's History of India.*

When any calamity has been suffered, the first thing to be remembered is, how much has been escaped.—*Dr. Johnson.*



[Aleppo.]

HALEB, or ALEPPO.

HALEB (commonly, but erroneously, called Aleppo), the capital of a pashalik of Asiatic Turkey of the same name, is situated in the north part of Syria, in 36° 11′ 32″ N. lat. (according to Niebuhr), and 37° 9′ E. long. It is one of the largest and most important towns in Western Asia. Tavernier, in 1670, estimated the population at 258,000; D'Arvieux, in 1683, at about 258,000; Russell, in the last century, at 235,000, of which 200,000 were Mohammedans, 30,000 Christians, and 5000 Jews; Volney reduces the number to 100,000: but Rousseau, who lived for some time at Haleb as French consul, estimates it at 200,000. Rousseau also informs us that the town is built on four hills, called Djeleb beni el-Kaka, on one of which there is a fortified castle; that it is surrounded by a stone wall, and has seven gates;* that it contains 5 serais, or governor's palaces, 100 mosques, of which the most celebrated is that of Zacharias; 50 mesjeds, or oratories, of which the most beautiful, called Helawie, is supposed by Pococke to have been formerly a Christian church built by Helena, mother of Constantine; 10 or 12 public schools, 2 public libraries, 5 mehkems, or courts of justice, 60 baths, 100 coffee-houses, 40 or 45 great bazaars, 31 khans, occupied principally by Franks or other strangers, 200 fountains, about 15 wakfs, or religious institutions, a mewla-khâné, or college of dervishes, 5 Christian churches, a synagogue, and 40,000 houses. But the state of the city has been greatly changed by an earthquake which happened in August, 1822, and which destroyed almost two-thirds of the buildings. The population is a mixture of Turks, Arabs, Christians, and Jews. The Christians principally belong to the Greek, Syrian, and Armenian churches: of these the Greeks are the most numerous and the richest. The small river Koik runs along the west side of the town.

Before the earthquake of 1822, Haleb was supposed to possess 12,000 artisans, and was celebrated for its gold and silver lace, its manufactures of silk and cotton goods, shawls, &c., being, next to Smyrna, the most commercial town of Turkey in Asia; but its prosperity was chiefly owing to its situation, which rendered it one of the great commercial marts between Europe and Asia. It carries on a great caravan trade with Bagdad, Persia, and the eastern parts of Asia. The goods destined for the European market are shipped from the port of Latakia. Consuls from all the commercial states of Europe reside at Haleb.

The ancient name of the town was Chaleb, or Chalybon, which was changed by Seleucus Nicator into Berœa. It continued to be called by that name until its conquest by the Arabs under Abu Obeidah in 638, when its original name of Chaleb or Haleb was restored. It afterwards became the capital of an independent monarchy under the sultans of the race of Hamadan, under whose rule it appears to have enjoyed great prosperity. In the latter part of the tenth century Haleb was again united to the Greek empire by the conquests of Zimisces, emperor of Constantinople. During the crusades Haleb was subject to the Seljuke princes. In 1260 it was plundered by the Moguls, and again in 1401 by Timur. It was afterwards annexed to the dominions of the Mameluk sultans of Egypt, but was conquered by Selim I., the Turkish sultan, and has since that time been subject to the sultans of Constantinople. It was, however, lately, for a few years, in the possession of the pasha of Egypt, but is now again restored to the dominion of the sultan.

The pashalik of Aleppo is bounded on the west by the Mediterranean, on the east by the Euphrates, on the north by an imaginary line drawn from Scanderoon (the ancient Alexandria) on the coast to El Bir on the the Euphrates, and on the south by another line drawn from Billis to the Mediterranean, passing by Murrah and the bridge of Shogher. The northern part is occupied by high mountains, known to the ancients under the name of Amanus, which is only a branch of Mount Taurus. The southern part is sterile and sandy; but the plains at the foot of the mountains are fertile, and afford good pasturage for the numerous flocks of the Arabs and Kurds, which graze upon them during the greater part of the year. The inhabitants only cultivate the land in the mountainous districts, which produce wheat and other sorts of corn, melons, olives, cotton, tobacco, figs, &c.: the level parts of the country are abandoned to the Kurds and Arabs. The heat of the climate is seldom oppressive, in consequence of the west winds which blow from the Mediterranean. The country is reckoned healthy; but the inhabitants

* In Niebuhr's plan, 1766, there are nine gates.

of Haleb are very subject to a disease which first appears under the form of an eruption on the skin, and afterwards forms into a sort of boil: it dies away in about eight months from its appearance. Volney and many other travellers attribute the disease to the badness of the water which the inhabitants drink.

The pashalik of Haleb is watered by the Euphrates, the Orontes, and the Koik. The Koik rises near Amtab in the north, and passing by Haleb, loses itself in a morass about sixteen miles south of the city.

The pashalik contains no other towns of any importance, with the exception of Haleb. Alexandria (Scanderoon) and Antioch, which were once so celebrated, are now of little importance.

THOMAS GENT, OF YORK, PRINTER.

Thomas Gent is known to students of the topography of the Northern Counties, especially Yorkshire, as the author of several works on local antiquities and local history; and as being one of the chief master-printers out of London towards the middle of last century. Until within the last few years nothing was known of his personal history beyond a few names and dates, and the incidental allusions to himself contained in his writings. In 1832 a thin octavo volume was published containing "his Life," or rather autobiography, printed from a manuscript in Gent's hand-writing, discovered by Mr. Thorpe of Bedford Street in a collection of papers received from Ireland. This document gives a minute but not uninteresting account of the life of its author until the age of fifty-six, the time when it was drawn up. It does not appear to have been resumed after that period. It is valuable as the simple narrative of honest perseverance gradually surmounting very formidable obstacles, and as an illustrative record of some of the events and customs of the time.

Gent was the son of Irish parents, and appears to have been born in Dublin about the year 1691. When his autobiography commences (some of the first pages have been lost) we find him, at the age of sixteen or seventeen, absconded from his parents, and from his master, Mr. Powell, a printer in Dublin, and embarking for England. In a poetical narrative of his adventures, inserted in a subsequent part of the pamphlet, he tells us that the wanton tyranny of his master was the cause of this desertion. Arrived in England with an Irish shilling, and sixpence given to him by the captain of the vessel, he began to consider what course was most advisable under the circumstances. He travelled to Chester, "but no printing-press, as I could hear of, was set up in those parts;" so he and his fellow-travellers "were obliged to push forward to London." His companions he soon discovered were very disreputable characters. "At first," says he, "they called me Mr. Tommy; but when they found the title did not agree with my empty pockets, they imposed some of their heavy burdens on my wearied shoulders." After being implicated by these vagrant friends in the unlawful appropriation of a goose, and after narrowly escaping impressment by a party of soldiers whom he overtook on the road, he reached St. Alban's, "very lame and tired, and with but twopence in the world." When and how he reached London we do not know, for there is unfortunately another lost page in the manuscript. When the story is resumed, he is in the employ of Mr. Midwinter, a master-printer, as an apprentice for the remainder of the usual term of seven years. His hardships at this period of his life were more than ordinarily severe. He complains of being often "severely beaten," and says, "I worked many times from five in the morning till twelve at night and frequently without food from breakfast to five or six in the evening." His peaceful disposition, both here and in fact throughout his whole life, entailed upon him much annoyance by inviting the insults of his more audacious fellow-workmen. When grossly provoked, if his own statement may be trusted, he does not appear to have been deficient either in will or power to punish the aggressor.

When he was about twenty years old, his master relinquished all claim upon him as an apprentice, and began to treat him with great courtesy. We discover the immediate cause of this change in the circumstance "of my writing Dr. Sacheverell's sermon after his suspension, for which I waited from morning till evening to hear him, and my master cleared thirty pounds that week by it." This incident proves that, under all his disadvantages, Gent had assiduously availed himself of every chance of improvement, and it indicates the immense excitement caused by the proceedings against Sacheverell, and the manner in which the cravings of that excitement were supplied.

His whole stock of money at the time of his liberation was a single shilling, sixpence of which paid the postage of a letter from his parents at Dublin, and with the remaining sixpence he purchased Ayre's 'Arythmetic' at a book-stall. But his fortunes began to mend apace. He obtained employment immediately with a Mr. Bradford. He describes an absurd ceremony which the journeymen of his new shop compelled him to perform as indispensable to his initiation among them, "besides having to pay what is called beer-money." We hope the present generation of operatives estimate such practices at their proper value. He soon after engaged himself to Mr. White of York, "for eighteen pounds a year, besides board, washing, and lodging." He offered twenty shillings to the carrier who traded between the two cities for a place in his waggon, but the man would not take less than five and twenty, "so I was resolved to venture on foot." Arrived at York, he says, "the first house I entered to inquire for my new master was in a printer's at Petergate, the very dwelling that is now my own by purchase." Mr. White was at dinner "by the fireside, sitting in a noble arm-chair with a good large pie before him, and made me partake heartily with him." He continues, "my master had plenty of business to employ several persons, there being few printers in England, at that time, except in London; none then, I am sure, at Chester, Whitehaven, Preston, Manchester, Kendal, and Leeds, as for the most part now abound." This was written in 1746. Gent was engaged by Mr. White in 1714.

His situation at York soon became uncomfortable, and after "having vented the diversity of my flowing passions" in thirty-six stanzas of six lines each, more valuable as an epitome of his personal history than for any poetical excellence, he determined to visit his native country. He had already conceived an affection for "Mrs. Alice Guy, upper maiden to Mrs. White, who, I was persuaded to believe, had the like mutual kindness for me; she was the daughter of Mr. Richard Guy, schoolmaster at Ingleton near Lancashire; had very good natural parts, quick understanding, was of fine complexion, and very amiable in her features." This young person ultimately became his wife. The prudence and disinterestedness he manifested by postponing their marriage until he had a reasonable prospect of providing for a family, are among the most interesting portions of his simple story, and certainly not the least honourable distinctions of his conduct and character.

After some delay, he found a vessel about to sail for Ireland. A storm compelled them to take shelter in Douglas harbour in the Isle of Man. They were detained here eleven days; but provisions were cheap. "I could buy," he says, "a pullet for four-pence, and a

quart of strong brandy for an English shilling, which went there for fourteen pence."

He did not stay long in Dublin, but again engaged himself to Mr. White, with whom he continued during the years 1715 and 1716. He then returned to London, to his first master, Mr. Midwinter. He mentions as taking place about this time the execution of two men for an alleged robbery, on the highway, of three halfpence; which, he says, "neither of them had received." The incident is a shocking exemplification of the savage state of our criminal jurisprudence at that time, and of the little value set on human life in judicial proceedings.

In 1717 he was admitted a freeman of the Company of Stationers; and in October of the same year commenced citizen of London at Guildhall. "We dined at a tavern that day, and my part of the treat, with other expenses, came to about three pounds." He adds, "all this while I was as careful in saving what I earned as possible, but yet could not perceive a prospect of settlement whereby to maintain a wife as I judged she deserved, and I could not think of bringing her (Alice Guy) from a good situation without I could certainly make us both happy in a better." After several vicissitudes of employment, he was offered a very advantageous partnership at Norwich, but at the moment he was setting out to that place he received intelligence that his parents were in a very precarious state of health, and desired to see him for perhaps the last time. He at once relinquished the prospect before him, "taking care to recommend Mr. Robert Raikes in my room, who is now settled master in Gloucester,"* and started for Ireland His affection for his father and mother, when age had rendered them unable to maintain themselves, is beyond all praise. He appears to have considered their comfort paramount to every other motive.

When he returned to London, he was employed by a Mr. Clifton, apparently a disguised Jesuit, who was in active communication with Dr. Atterbury, the Jacobite bishop of Rochester. After printing from a manuscript, of which he was not allowed to know the authorship, "the papers were packed up and delivered to my care, and the same night, my master hiring a coach, we were driven to Westminster, where we entered into a large sort of monastic building. Soon we were ushered into a spacious hall, where we sat near a large table covered with an ancient carpet of curious work, and whereon was soon laid a bottle of wine for our entertainment. In a little time we were visited by a grave gentleman in a black lay habit, who entertained us with one pleasant discourse or other. He bid us be secret; 'For,' said he, 'the imprisoned divine does not know who is his defender'" (the printed papers were a pamphlet in defence of a person under confinement). Gent of course assured the grave gentleman and his master that there was no fear of his disclosing anything he might know; but of this they had taken pretty good care; for he admits that the "wine" presently made him so tipsy that he does not know by what means he was conveyed home. He never seems to have suspected that what he swallowed was anything but the honest juice of the grape. One day afterwards he happened to encounter a file of guards conveying a state prisoner to the Tower; and in Dr. Atterbury, the person under arrest, recognised the grave gentleman "by whom my master and I had been treated."

Some time after this he published 'Teague's Ramble,' a satire "I had written on some of our profession, who richly deserved it for their unmerciful usage of me and others."

He then gives a long account of one Burridge, a penniless author, alias "bookseller's hack," who "sold copies (*i.e.* pamphlets, &c.) for half-a-crown a-piece," and spent his life, after the genuine Grub Street fashion, in alternate extravagance and starvation, sometimes at large, but oftener in prison, and always in a scrape, or beset by bailiffs. He then describes being sent as a reporter to Kingston assizes. He had now accumulated a respectable sum, and began to buy furniture, and type, and other things that would be useful when he started in business on his own account. With many other printers, he was committed to Newgate on suspicion of being concerned in the publication of some obnoxious pamphlets relative to the pending prosecution of Dr. Atterbury, but as nothing could be proved against him, he was presently liberated. He says, "My stock of goods growing larger by my careful industry, I moved into the next house, where I set up my press and letters, and here I published truly some things relating to the bishop, but while I pleased the people with an artful taking title, I strove to instil into them principles of loyalty, love, and obedience." His facility of combining the occupations of author and printer had always been of service to him, for he says, "during my apprenticeship, Mrs. Midwinter, being fully satisfied of my genius at the pen, obliged me to turn author for them, in which office my harmless style of relating occurrences that daily happened proved very acceptable to the public." His business increased very satisfactorily, still he did not altogether abandon the humbler but more certain profits of journeyman's employment. Twenty shillings per week appears to have been the maximum rate of printer's wages at that time.

At length, at the sober age of thirty-three, "being a citizen of several cities, free from debt, and possessed of two hundred pounds," he ventured to propose marriage to the young person before alluded to. "I took leave," he says, "of my friends at the Black Swan, in Holborn, where I paid my passage in the stage coach, which brought me to York in four days."

On the 10th of December, 1724, he became a husband, having previously entered upon his former master's (Mr. White) business and premises. "At York," he says, "I found a newspaper printed, but utterly spoiled by being compiled by a mean-spirited self-conceited Quaker, whom I discharged."

His marriage does not seem to have yielded the happiness he expected. His disappointment is rather indicated than expressed, but he complains loudly of treacherous servants and violent opposition in his trade. He again visited his parents, and narrowly escaped shipwreck. As he returned home, he overtook a countryman, who told him that on that day (3rd of November, 1725) "was to be hanged the greatest rogue in all England, called Jonathan Wild. I had seen that thief-catcher several times about the Old Bailey, and particularly took notice of him when he rode triumphantly, with pistols, before the criminals, whilst conveying to execution."

In 1728, "the opposition still continuing against me," he conceived the design of appearing before the public in a more imposing character than he had hitherto assumed: he projected a history of York. The work was published in 1730, under the title of 'The Ancient and Modern History of the Famous City of York, and in particular of its magnificent Cathedral, &c.; the whole diligently collected by T. G., York.' The book is a faithful collection of data, but its accuracy is its most commendable quality. It is rather peevishly mentioned by Drake, in his 'Eboracum,' published six years later, we think without sufficient reason. Several works of standard value were printed at his press between the years 1730 and 1740. His diligence, courtesy, and uprightness as a

* Was this the Mr. Robert Raikes who is so gratefully remembered as the founder of the first Sunday-school?
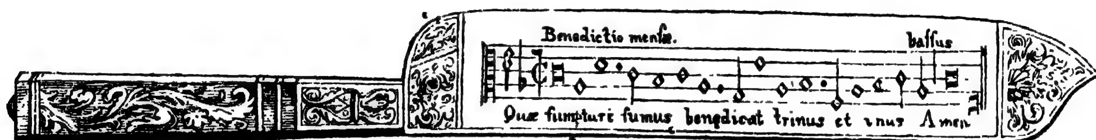
tradesman and a citizen, obtained for him the esteem of the whole neighbourhood, and when misfortune overtook him, his previous integrity was a constant and increasing source of consolation and sustenance.

In 1733 he published his 'History of Ripon,' with a notice of the antiquities in several other towns in the county; and this was followed, in 1736, by his 'History of Hull.' Although none of these works can pretend to first-rate excellence, still, as the production of the leisure hours of a self-dependent mechanic, acting in the different capacities of author, compiler, collector, printer, and publisher, they are highly creditable. It is to be feared that Gent's fortunes did not increase with his reputation. When his narrative closed, in 1746, he was already in difficulties, not, however, induced by his own misconduct, but by causes against which human foresight could raise no effectual barrier. He still continued to write occasional pieces, and give them to the world, but age and necessity conspired to repress his perseverance and industry. At the age of seventy-one he published his 'History of the East Window of York Minster;' and an octavo pamphlet, in heroic couplets, entitled 'Historical Delights,' ought, perhaps, to be referred to a still later period of his life. It is printed on the coarsest paper, and in the rudest manner, a melancholy contrast with the neat typography of his earlier works. It contains several passages of very creditable poetry. The concluding sentence expresses an important truth in a manner not unworthy of the subject:—

> "But when deserted by ungrateful friends,
> Delightful studies make some small amends;
> At least the mind from troubles disengage,
> And smooth the harsh severities of age,
> Enrich our souls for greater joys above,
> Where all is glory, ecstacy, and love."

A man who had long ago fulfilled his three score years and ten, and was afflicted by poverty and the ingratitude of friends, and could so nobly moralise on his condition, has surely some claim on the admiration and reverence of posterity.

He died at York, on the 19th of May, 1778, in his eighty-seventh year, and was buried in the church of St. Michael-le-Belfrey.



[Musical Knife in the Louvre.]

MUSICAL KNIFE.

THIS very curious specimen of ancient musical taste is to be found among the miscellaneous collection of early French antiquities preserved in the Louvre. The blade of the knife is of steel, upon which is engraved the "Blessing of the Table," or Grace before Meat, which may be literally translated thus:—"What we are about to take, may Trinity in Unity bless. Amen." This is accompanied by the musical notes of the *bass* part only, so that there must have been a set of four or five knives, upon each of which the other parts necessary to make the composition complete were engraved.

From the character of the musical notes, and the general appearance of the ornamental work that embellishes it, we should be inclined to fix the date of this knife somewhere about the latter half of the sixteenth century, when a taste for music was so universally felt, and its practical study so commonly exercised, that nearly every person with any pretension to respectability or a good education could play on some instrument, or at least bear a part in a madrigal or other composition. Not to be able to do so would imply the disgrace of ignorance, or a culpable neglect of the necessary accomplishments of good society. This relic is a curious confirmation of this fact, and of the extent to which such feeling was carried.

We may just remark, in conclusion, that the ornamental portion of the blade is (like Mrs. Quickly's goblet) "parcel-gilt;" that is, gilt on the raised parts of the work. The handle is of ivory, upon which is carved a running sprig.

Chemical Principles of the Rotation of Crops.—Those plants ought to succeed each other which contain different chemical ingredients, so that the quantities of each which the soil at any given time contains may be absorbed in an equal ratio. Thus a productive crop of corn could not be obtained without the phosphates of lime and magnesia, which are present in the grain, nor without the silicate of potass, which gives stability to the stalks. It would be injudicious, therefore, to sow any plant that required much of any of the above ingredients, immediately after having diminished the amount of them present in the soil by a crop of wheat or of any other kind of corn. But, on the other hand, leguminous plants, such as beans, are well calculated to succeed to crops of corn, because they contain no free alkalis, and less than one per cent. of the phosphates. They thrive, therefore, even where these ingredients have been withdrawn, and during their growth afford time for the ground to obtain a fresh supply of them by a further disintegration of the subjacent rock. For the same reason, wheat and tobacco may sometimes be reared in succession in a soil rich in potass, because the latter plant requires none of those phosphoric salts which are present in wheat. In order, however, to proceed upon certain data, it would be requisite that an analysis of the plants most useful to man should be accomplished in the different stages of their growth, a labour which has hitherto been only partially undertaken. It is a curious fact that the same plant differs in constitution when grown in different climates. Thus, in the beet-root, nitre takes the place of sugar when this plant is cultivated in the warmer parts of France. The explanation of this difference is probably as follows:—Beet-root contains, as an essential ingredient, not only saccharine matter, but also nitrogen; and it is probable that the two are mutually so connected together in the vegetable tissue that the one cannot exist without the other. The nitrogen, being derived from the decomposition of ammonia, must be affected by any cause which diminishes the supply of the latter; and in proportion as this ingredient is wanting, the secretion of sugar will likewise fall off. Now, it has been shown by Liebig that the formation of nitric acid is owing to the decomposition of ammonia; and it is conceived by him that the last products of the decomposition of animal bodies present themselves in the form of ammonia in cold climates, and in that of nitric acid in warm ones. Hence, in proportion to the amount of nitric acid formed, and of nitre absorbed by the plant, that of the nitrogen, and, consequently, that of the saccharine matter present in it may be diminished.—*Lectures on Agriculture, by Dr. Daubeny, Sibthorpian Professor of Rural Economy in the University of Oxford.*

He that does not know those things which are of use and necessity for him to know, is but an ignorant man, whatever he may know beside.—*Tillotson.*



[The Franklin and the Merchant.]

CHAUCER'S PORTRAIT GALLERY.

THE FRANKLIN.

The name of the class to which this luxurious respectable old gentleman, this "Epicurus' owen son," belongs, is derived from the word *frank*, free, that is to say, the Franklin was one who held his lands immediately from the king, paying homage, but free from all feudal services or payments. And a person of considerable dignity and importance he must have been at and prior to the period of Chaucer. In the 'Metrical Chronicle' of Robert de Brunne (thirteenth century), he is placed in very high companionship indeed: that learned monk writes, there

> "Was mad an other statute, that non erle, ne baroún,
> No other lord stoute, ne fraunkelyn of toun,
> Till holy kirke salle gyue tenement, rent, no loud," &c.

We need not, therefore, be surprised to find Chaucer's Franklin filling the distinguished offices of sheriff and knight of the shire; still less to find that he can afford to keep what, in modern parlance, might almost be called "open house." The dress of the Franklin, according to the duke of Sutherland's manuscript, was a surcoat of red lined with blue, with bars or stripes of fringe or lace over it. He wore a small blue hat turned up, and black boots. For the rest, let Chaucer himself speak:

> "White was his beard as is the dayesy.
> Of his complexión he was sanguine;
> Well lov'd he by the morrow a sop in wine.
> To liven in delight was ever his wone,*
> For he was Epicurus' owen son;
> That held opinión that plain delight
> Was verily felicity parfite.
> An householder, and that a great was he,
> Saint Julian he was in his countrée.
> His bread, his ale, was always after one,
> A better envyned† man was nowhere none.
> Withouten bak'd meat never was his house,
> Of fish and flesh, and that so plenteous,
> It snewed, in his house, of meat and drink,
> Of allé dainties that men could of think,
> After the sundry seasons of the year:
> So changéd he his meat and his suppér.
> Full many a fat partridge had he in mew,
> And many a bream, and many a luce‡ in stew
> Woe was his cook, but if his saucé were
> Poignant and sharp, and ready all his gear.
> His table dormant§ in his hall alway,
> Stood ready cover'd all the longé day.
> At sessións there was he lord and sire;
> Full often time he was knight of the shire.
> An anlace,|| and a gipciere,¶ all of silk,
> Hung at his girdle, white as morrow milk.
> A sheriff had he been, and a countour;
> Was nowhere such a worthy vavasour."

Saint Julian, to whom the poet has likened the Franklin, was a saint who enjoyed particular reputa-

* Custom.

† That is to say, a man having a better store of *wine*.

‡ Pike. § Never moved, fixed.

|| A kind of knife or dagger generally worn at the waist in Chaucer's time. ¶ Purse.

tion as an admirable caterer for his votaries in the matters of good living, good lodgings, and, in short, good things of all kinds. In some of the old legends, Simon, the leper, at whose house our Saviour lodged in Bethany, is called "Julian, the good herberow." In the 'Legend of Saint Julian,' a manuscript of the sixteenth century, in the Bodleian Library, occur the following as the concluding lines:—

"Therefore yet to this day they that over land wend,
They biddeth Saint Julian anon that good herberw he them send,
And Saint Julian's Pater-noster oft sayeth also,
For his father's soul, and his mother's, that he them bring thereto"

Travellers and their lodgings, indeed, appear to have enjoyed the saint's especial protection,—to have formed the principal objects of his care; for in the tale of Beryn* he is invoked to revenge a traveller who had been treacherously used at the place where he had been staying.

The last two lines of Chaucer's description have caused his commentators much perplexity. Contour has been supposed to mean coroner, and Warton, in his 'History of Poetry,' adopts that reading, and illustrates it by remarking that it was an office "anciently executed by gentlemen of the greatest respect and property." The Chaucer MSS. all read countour or *comptour*, and this last reading appears to us to explain its meaning. Compteur is the French word for an accountant or reckoner. Robert of Gloucester, speaking of the summoning of a hundred court by the constable of Gloucester castle, says,

"He held this hundred mid great folk and honour,
And Adam of Arderne was his chief contour."

Chaucer's Franklin was probably, like Adam of Arderne, the "chief contour" or steward of the hundred to which he belonged, and officiated on all such great public occasions. The meaning of the word vavasour is also a matter of doubt. Tyrrwhitt considers it to mean the entire class of middling landlords, among which there was "nowhere such a worthy" man as our Franklin.

From this period the class appears to have gradually sunk in rank and influence, though still distinguished for its wealth. A century later, Sir John Fortescue, the preceptor of Edward IV. and chancellor to Henry VI., writing during the reign of the former, states that "England is so thick spread and filled with rich and landed men, that there is scarce a small village in which you may not find a knight, an esquire, or some substantial householder, commonly called a frankleyne; all men of considerable estates. Lastly, we may observe that by the time of Elizabeth the Franklin must indeed have "fallen from his high estate," for Shakspere to have spoken disrespectfully of him; yet so it is:—

"Let Boors and *Franklins* say it, I'll swear it,"

exclaims the Clown, in the 'Winter's Tale.'

"Boors *and* Franklins!" Is it come to this! The "Saint Julian in his countrée," the lord at sessions, and the knight in parliament, all degraded into such vile companionship! their very existence forgotten in the vile indistinguishable horde of "boors and franklins!" But worse was to follow. Two centuries and a half more have elapsed, and the very name sounds strange to us. "Boors" yet flourish, but the franklins are nowhere to be found, except in the pages of Chaucer. Well, there at least they are insured an everlasting asylum.

* One of the stories told by the travellers on their return from Canterbury, in a work written as a continuation of Chaucer's great work, by a poet of the fifteenth century.

KENDAL AND THE VALE OF KENT.

In No. 453 of the 'Penny Magazine' some account was given of two very considerable valleys, those of the Eden and the Lune; the first-named river afterwards passing off towards the north-west through the entire extent of Cumberland, and the latter, after traversing the northern part of Lancashire, a few miles below the ancient borough of Lancaster, falls into Morecambe Bay. Between these two rivers, as they respectively diverge to the right and to the left, lies an extensive, wild, and mountainous region, interspersed, however, with some fine fruitful and interesting valleys, among which, and by far the most noted and extensive one, is that of the Vale of Kent.

This valley is not, however, of any very large extent, neither is the river which lends its name to it a large one, but it is that which falls into the head of Morecambe Bay (just within the southern confines of this county), and whose channel along this part of Milnthorpe Sands forms a rather intricate navigation for small coasting vessels during spring-tides, the only sea-borne vessels that can approach the county of Westmoreland.*

The river Kent has its source in that lofty range of mountains which separates the waters which flow northward into the secluded lakes of Ulswater and Hawswater from those that flow to the southward and form this river, as well as those that fall into the beautiful lake of Windermere; this portion of the dividing ridge of mountain is known to the traveller who climbs these lofty ascents in search of the picturesque, under the names of High-Street, Kirkstone, and Harter Fell. But from this lofty mountain-region, running east and west for many miles, commencing towards the east at Shap Fells, and thence continuing westward until broken up into those pyramidal rocks called Langdale Pikes—several diverging spurs or ridges (like ribs from the spinal bone) project out either way, with deep narrow valleys shut in between them: and it is down one of these (Kentmere), and probably the longest of the whole, that this infant stream first receives the name of Kent. But though the whole of the valley is called Kentmere, as if embosomed within it slumbered some lake of considerable size, all that it can boast of in this way consists of a piece of water no larger than such as are frequently, in this part of the country, known by the less imposing name of *tarns*, such a one being found midway down the valley.

But what may be considered as the more legitimate river Kent—for the mountain-streams are little more than what are commonly called *becks* in some of the northern counties—commences but a mile or two north of the town of Kendal, and is formed by the junction of three respectable-sized streams—the Kentmere branch being the most westerly one; the Mint, the one flowing

* Milnthorpe is a small market-town, but in ancient writings usually denominated a sea-port. It is situated a mile from the head of the estuary, on a little river called the Bela, which, after entering the sands, soon falls into the channel of the Kent. The coasting vessels plying from hence to Lancaster, Ulverston, Whitehaven, and Liverpool, cannot approach the town, but unload their cargoes into carts and waggons at low-water, whence they are carted to some small storehouses built along the shore, and called Sand-side, or, frequently without the trouble of unloading, to their destination at once (the greater part being intended for Kendal); but the Lancaster canal, which has been completed as far as Kendal for upwards of twenty years, has greatly interfered with the traffic of the few small trading vessels, the goods being shipped in larger vessels direct to Lancaster, and from thence sent by canal to Kendal.

There is another small river, called the Lythe Beck, or sometimes the Poo, which unites its waters with the Kent a little above the head of the estuary; but this, like the Bela, becomes part of the Kent; the head of the bay being but from one to two miles across.

farthest from the east; and Long Sleddale Beck forming the centre branch. The source of the first of these has been already mentioned; the most easterly branch rises in that dreary waste called Fawcett Forest; and the third rises in the same range of mountains with the first, and waters a long narrow valley running parallel with Kentmere. There are some other small tributaries, the principal one watering the valley of Staveley, and rising within a mile or two of Windermere; but the rest are of little importance. Indeed, after the junction of the three branches already spoken of, there is not any other stream or beck worthy of notice until the river enters the head of Morecambe Bay, as already stated.

Kendal—commonly written Kirkby-Kendale, that is, the church in the dale of the Ken or Kent (in the time of the Romans called Can)—although not the county town, is and has long been by far the most important place in Westmoreland. Under the Reform Bill, Appleby, the county town, was deprived of its ancient privilege of returning members to parliament, and Kendal was enfranchised, and now returns one. The county lost one member by the passing of the aforesaid bill; it formerly returned four, whereas it now only returns three. Kendal was among the ancient boroughs, enjoying corporate rights, and under the jurisdiction of a mayor and twelve aldermen; and has on several occasions given titles to persons of distinction. It is not, nor does it appear ever to have been, a place capable of offering much resistance to an armed force; for, notwithstanding that the river Kent bounds it towards the east from one extremity of the town to the other, the ground rises abruptly all along the west side, leaving a narrow strip between the river and the hill (upon which the town stands), so that the town is overlooked and completely commanded by this high ground (called the Banks) from one extremity to the other. Notwithstanding its distance from "the Borders," it has often suffered from the incursions of the Border clans. It was visited, in November, 1715, and again in the same month in 1745, by the Scotch rebels; and on the latter occasion Prince Charles Edward Stuart and his adherents spent two nights here, the intermediate day happening to be Sunday.

It has long been a place of considerable trade, particularly in the manufacture of coarse woollen goods, oddly enough known by the name of Kendal cottons. Linsey-woolseys, another peculiar sort of goods, were formerly manufactured here in considerable quantities, and worn almost universally by the female part of the peasantry of the surrounding country. So early as the reign of Edward III., a Flemish manufacturer of the name of Kemp came over, and settled here; and shortly afterwards several weavers arrived from the same country and settled here also. Ever since that period, up to the present time, a more extensive trade has been carried on here in coarse woollen goods than in any other town of the four most northerly counties of England, Carlisle even not excepted; and although, through the aid of improved machinery, the manufacturers have been enabled to improve and in some degree vary their original line of business, yet it is still for the most part the coarse long wool, the produce of the flocks of mountain sheep in the neighbouring districts, upon which the manufacturing part of the population is employed. Less than forty years ago vast numbers of the inhabitants of the surrounding dales and valleys, and parts of the country situated at the distance of fifteen or twenty miles, were employed by the Kendal wool-staplers and hosiers in knitting worsted stockings, when liberal wages were paid to the knitters; but for twenty years this business of stocking-knitting has been almost entirely laid aside, and the few persons who are now employed in knitting, knit coarse scarlet caps for the negro population of the West Indies, and Guernsey frocks for the use of the navy. Of later years a finer branch of manufacture has been introduced into Kendal, namely, Valentia waistcoating, which has already obtained a high reputation amongst that description of goods. During a considerable period the woollen cloths made here, and dyed green, maintained some celebrity; but at length more permanent greens were discovered, and the Kendal greens fell into comparative neglect. However, if the historians of past ages are to be depended upon, the Kendal archers were noted bowmen, and always clothed in the manufactures of the place; and at one period were clad in the snow-white cloths that were manufactured here. At the battle of Flodden Field the Kendal archers are spoken of as being clad in white; as also appears to have been the case with them on other occasions where we find them mentioned.

The appearance of the town is not very striking, from whatever point it is viewed. It consists of one long street running north and south, which is somewhat curving as well as undulating, and hence the view is never very extensive. There are also several short streets and lanes, leading to the foot of the Banks on the one hand, and to the river on the other, besides a tolerably good street which branches off from the main one towards the north-east, and along which is the route which leads the mail-coach road across the river Kent, and thence towards the north. There are three bridges across the river; until lately there was but a very small suburb on the opposite side, but for the last twenty years houses have been occasionally springing up; and till within a few years the parish church and a small chapel in the market-place were the only places of worship belonging to the Established Church; but two new churches have recently been added to the number. For the number of inhabitants, however, the different religious sects that have chapels or meeting-houses are very numerous; the Friends or Quakers constitute a leading sect in the town. The parish church is one of the largest buildings of the same sort in England; and the parish itself is remarkably extensive, extending twelve or thirteen miles from north to south, and ten or eleven miles from east to west; and what is still more remarkable, there are thirteen or fourteen chapels-of-ease at a distance from the town, in various parts of the parish, to most of which small endowments are attached, the vicar of Kendal having the presentation to the whole of them, with one or two exceptions.

On the east side of the river, at the distance of three-quarters of a mile from the town, are the ruins of a strong castle named after the town. The site is a very remarkable one, for although a level plain surrounds it, the ruins occupy the summit of a hill of considerable elevation, but so regularly shaped, being the longer segment of an ellipse, that it seems far more like an artificial mound than a natural one. It was here that Catherine Parr, one of the wives of bluff King Henry VIII., was born; but the building has been in a state of decay for more than two centuries; and the present ruins only indicate its original strength by the thickness of the walls that still remain; but the extent to which it may have reached at an early period may at present be more easily conjectured than determined. On the opposite side of the town, upon the Banks, is an artificial mound called Castle How, but whether it is the remains of some old Roman fort, or a work of more recent date, seems never to have been satisfactorily decided; but that there was a Roman station, the *Cancangium of the Notitia*, about a mile from Kendal, at a place that now bears the name of Watercrook, is very certain; and some remains of Roman military works are there still visible.

The houses are built of stone (limestone princi-

pally), and covered with blue slate; and in the principal streets are substantial and respectable-looking buildings: the stones are quarried in the banks above the town, and the slate is found in the mountains to the west and the north, at a distance of from twelve to twenty miles. Though the size has increased within the last fifty or sixty years, the population has apparently increased still more. Twenty-two years ago, the Lancaster canal was opened to this town, which is a source of great convenience both to the town and surrounding country; and the inhabitants are flattering themselves at present with the hope that the railroad, which has already reached Lancaster (twenty-two miles distant), will ultimately pass near to Kendal, in preference to crossing Morecambe Bay; but neither route seems as yet determined upon. In the year 1784 the population was 7571; in 1811 it was 8759; and in 1831 it amounted to 11,301.

The vale or valley of Kent, properly so called, in the vicinity of Kendal, is little more than a mile across the bottom of it, and probably about five miles across from ridge to ridge. Following the valley downwards to the extreme head of Morecambe Bay, it is about eight miles; and here it opens out to a somewhat indefinite width, for the bounding hills are no longer of considerable elevation; and although it may not be the most fertile, it certainly is one of the best cultivated districts in the county. No portion of the river is navigable until it enters the Sands; and although it may then be considered as having lost its original character, still down the bay to the distance of ten or twelve miles, the guide that pilots the traveller across the sands when the tide is out, points out to him a slowly stealing current, which has to be forded, as "the channel of the Kent." From Kendal to tide-water there is a very considerable descent, the river running with a lively current over a bright gravelly bottom; but about four miles below the town it is hemmed in by immense shelving rocks, beneath some of which, for a space, it nearly disappears. A little below this place the rocks run obliquely across the whole channel of the stream, so that a cataract, not quite perpendicular, of twelve or fourteen feet, is formed. It is, however, of so precipitous a nature as to prevent the salmon (which are found in Levens park, immediately below the waterfall, in great numbers) from getting farther up the river; and the writer of this article has many a time sat on the opposite bank watching their vain attempts to surmount the difficulty.

There are several old manor-houses along this part of the valley, which in their time have been places of interesting consideration; but the only two that continue to attract the traveller's notice are Sizergh Hall or Castle, belonging to Thomas Strickland, Esq., and Levens, the property of the Hon. Col. Howard. The former of these mansions is situated in a park west of the road leading from Kendal to Milnthorpe; and the latter, also on the west side of the same road, and almost immediately adjoining the river Kent, where it is crossed by a handsome ivy-bound bridge: the park, which is large and well stocked with deer, and containing some of the most splendid ornamental trees in the county, is situated on the contrary side of the high road, and through its entire length is divided into two parts by the river Kent. Levens, or Levens Hall, is a very antient mansion, and has evidently undergone alterations in its style of architecture from time to time, but it has never been materially modernized.

About a mile south of Levens is the pretty little rural village of Heversham (the name of the parish in which both Levens and Milnthorpe are situated), and the site of a handsome country church. The village is situated along the lower extremity of a hill of moderate elevation, called Heversham Head, which standing alone in the lower section of the valley of the Kent, from its summit a view of every part of the valley is commanded, and even in some directions far beyond the range of its collateral branches. At about one-third of the ascent of the Head from the village stands a venerable building apart from any inhabited dwelling, and almost secluded from public gaze by a few wide-spreading sycamore trees. This building is the endowed grammar-school of Heversham, and though somewhat humble in appearance, it is tolerably well endowed; and here have been educated several individuals of eminence in the different walks of literature; of those that are gone, a single instance need only to be mentioned—the late Bishop Watson, and, without attempting a longer list of the living generation, Professor Whewell, will suffice as an example.

Still nearer to the head of Morecambe Bay, and near what may be considered the southern extremity of the Vale of Kent, is the beautiful modern mansion of Dallam Tower, the residence of George Wilson, Esq. It is situated on the tributary stream the Bela; and although the mansion stands rather low, some beautiful views are commanded from the various eminences immediately adjoining, in an extensive park that is well stocked with deer. Near to this elegant residence are the woods in which a colony of rooks and another of herons once waged a remorseless war, but which now for many years have lived on excellent terms; for an account of which see 'Penny Magazine,' No. 511.

A great means of happiness is, a constant employment for a desirable end, and a consciousness of advancement towards that end.

Japanese uses of the Fan.—Neither men nor women wear hats, except as a protection against rain: the fan is deemed a sufficient guard from the sun; and perhaps nothing will more strike the newly-arrived European than this fan, which he will behold in the hand or the girdle of every human being. Soldiers and priests are no more to be seen without their fans than fine ladies, who make of theirs the use to which fans are put in other countries. Amongst the men of Japan it serves a great variety of purposes: visitors receive the dainties offered them upon their fans; the beggar, imploring charity, holds out his fan for the alms his prayers may have obtained. The fan serves the dandy in lieu of a whalebone switch; the pedagogue, instead of a ferule for the offending schoolboy's knuckles; and, not to dwell too long upon the subject, a fan, presented upon a peculiar kind of salver to the high-born criminal, is said to be the form of announcing his death-doom; his head is struck off at the same moment as he stretches it towards the fan.—*Siebold's Manners and Customs of the Japanese.*

Charge of Indian Cavalry.—The most important part of the Hindu battles is now a cannonade. In this they greatly excel, and have occasioned heavy loss to us in all our battles with them: but the most characteristic mode of fighting (besides skirmishing, which is a favourite sort of warfare) is a general charge of cavalry, which soon brings the battle to a crisis. Nothing can be more magnificent than this sort of charge. Even the slow advance of such a sea of horsemen has something in it more than usually impressive; and, when they move on at speed, the thunder of the ground, the flashing of their arms, the brandishing of their spears, the agitation of their banners rushing through the wind, and the rapid approach of such a countless multitude, produce sensations of grandeur which the imagination cannot surpass. Their mode is to charge the front and the flanks at once; and the manner in which they perform this manœuvre has sometimes called forth the admiration of European antagonists, and is certainly surprising in an undisciplined body. The whole appear to be coming on at full speed towards their adversary's front, when, suddenly, those selected for the duty at once wheel inwards, bring their spears by one motion to the side nearest the enemy, and are in upon his flank before their intention is suspected. These charges, though grand, are ineffectual against regular troops, unless they catch them in a moment of confusion, or when they have been thinned by the fire of cannon. —*Mr. Elphinstone's History of India.*



[Cowper and his Localities.—Cowper, from a Portrait engraved in Knight's 'Gallery of Portraits.' At the upper right-hand corner, a view of the Poet's birth place, Berkhamstead; and above it, Ruins of Olney Church, and Cowper's House in the Market-place, Olney. At the bottom, the "Summer-house," and the "Three Leverets."]

LOCAL MEMORIES OF GREAT MEN.

Cowper.

Cowper, one of the most popular of English poets, and a most delightful letter-writer, was born at the rectory of Great Berkhamstead in Hertfordshire, on the 15th of November (old style), 1731. His father, Dr. Cowper, was chaplain to George II., and his grandfather, Spencer Cowper, one of the judges of the court of Common Pleas. By the mother's side Cowper was connected with the poet Donne's family, and with the several noble houses of West, Knollys, Carey, Bullen, Howard, and Mowbray, and so by four different lines with Henry III., king of England. Berkhamstead, the poet's birthplace, is a town of considerable interest. The Mercian kings had a palace here, as had also the first of the Plantagenets, who granted to the inhabitants peculiar liberties and exemptions. In after-times two royal

favourites possessed the honour and castle, which was attached to the earldom of Cornwall: Piers Gaveston, in the reign of Edward II., and Robert de Vere, in that of Richard II. During the last few years of her miserable life, Cicely, duchess of York, and the mother of the last of the Plantagenets, resided here. The poet's recollections of this place were saddened by the loss of his mother, who died at Berkhamstead whilst he was yet but in his sixth year. One of the most beautiful of his minor poems records his feelings on that occasion.

Nearly fifty years after her death, he writes—"Not a week passes (perhaps I might with equal veracity say not a day) in which I do not think of her: such was the impression her tenderness made upon me, though the opportunity she had for showing it was so short."

Cowper was now placed at a boarding-school at Market Street in the same county, kept by a Dr. Pitman, where he suffered much from the cruelty of an elder boy. His savage treatment, he says, impressed such a dread of his figure on his mind, that he was afraid to lift his eyes upon him higher than his knees; and he knew him better by his shoe-buckles than by any other part of his dress! No inconsiderable portion of that frightful malady which in after-years so frequently made life intolerable to him, may probably be ascribed to this important era of the poet's life. Two years were spent at this school, when, being threatened with blindness, he was removed to the house of an oculist, where he spent two years more; and although he remained through life liable to an occasional inflammation of the eyes, they grew so much better, that he was enabled to enter Westminster School at the age of ten. Here he remained for eight years, during which time he acquired among his contemporaries the character of an accomplished scholar. Among those contemporaries he formed some close intimacies, and with men destined to acquire a poetical reputation only inferior to his own. There was Lloyd, the author of the poem called 'The Actor,' written with ease, vigour, and critical discrimination; Colman, the author of the 'Jealous Wife,' and of one of the best translations of Terence in the language; and Churchill, the satirist, and author of the 'Rosciad,' a man of still higher power. On leaving Westminster, Cowper was articled to a solicitor, in whose office he had for a fellow-clerk Thurlow, afterwards lord-chancellor. "There was I and the future lord-chancellor," he says in a letter to his dear friend and cousin Lady Hesketh, "constantly employed from morning to night in giggling and making giggle, instead of studying the law." On leaving this office, he entered the Middle Temple; in 1754 he was called to the bar, and in 1759 received the appointment of a commissioner of bankrupts. Whilst here he fell in love with his cousin Theodora Cowper, the sister of Lady Hesketh, who reciprocated his affection. This circumstance forms one of the most interesting episodes of Cowper's history. The lady's father appears to have first looked on with a favourable eye, but afterwards to have peremptorily forbidden the connection, assigning no other reason than the impropriety of marriage between persons so nearly related. In all probability he saw the incipient insanity which broke out shortly afterwards, and therefore was compelled to act as he did, and submit at the same time to the misconstruction which his conduct produced:—he could not tell Cowper what he feared. From that time the two cousins never met; although the affair left on her mind at least an ineffaceable impression. Many years afterwards, when his circumstances were not very good, he was accustomed to receive from time to time gifts from an anonymous correspondent; who that was, no one can doubt: Cowper himself playfully thanked Lady Hesketh (Theodora's sister) for these gifts, on the ground that as it was "painful to have nobody to thank," he must constitute her his "Thanks-receiver-general."

During his residence in the Temple he became a member of a club called the 'Nonsense Club,' consisting entirely of men educated at Westminster School, and comprising Bonnell Thornton and Colman, the principal writers of the 'Connoisseur,' to which Cowper contributed some papers, as well as Lloyd, and other distinguished men.

In 1763 the offices of clerk of the journals, reading clerk, and clerk of the committees in the House of Lords, all became vacant, and Cowper was offered the two last by his cousin Major Cooper, "the patentee of these appointments." They were hurriedly but gratefully accepted; and at the same moment he felt, as he states, that he had "received a dagger in his heart." The offices required that he should frequently appear before the House of Lords, which he felt was a matter of impossibility to one of his retired nervous excitable temperament. So he begged his relative to give him, instead of these offices, the office of clerk of the journals, an appointment of much inferior value; which was done. But some opposition had been raised from the first as to the right of nomination by Major Cooper; and, to his poor relative's horror, it was decided that the latter should appear at the bar of the house to be examined as to fitness. From this moment his state of mind was most pitiable: quiet, he says, forsook him by day and peace by night. He looked forwards with a sort of desperate satisfaction to the time when the ravages of the mental disease that was preying upon him should render it impossible for him to be subjected to the terrible examination; and at last, finding that event approach too slowly for his purpose, he made several attempts to commit suicide. There is nothing on record more painful in the history of any of our great men than in Cowper's own account of these lamentable events. Ultimately the office was resigned on the very day appointed for the examination, and Cowper was immediately removed to St. Alban's, where he was placed under the care of Dr. Cotton. The form of Cowper's madness was that of religious madness: he believed that he was cut off from all hope of "grace" in this world and salvation in the next. After a stay of eighteen months at St. Alban's, he was apparently cured; but from 1773 to 1776, for half of the year 1787, and for a considerable portion of the last six years of his life, he again experienced all the unutterable miseries of his awful malady.

On leaving St. Alban's, Cowper took up his residence at Huntingdon, in order that he might be near to a younger brother then at Cambridge. This is the place praised by Henry of Huntingdon (who derived his name from it) for the convenience of the fens just by, and for its great advantages of fishing and hunting. "It surpassed," he adds, "all the neighbouring towns in the pleasantness of its situation, and in its handsomeness and beauty." Cowper gives a somewhat different account of it. "We have neither woods nor commons, nor pleasant prospects; all flat and insipid; in the summer adorned with blue willows, and in the winter covered with a flood." "Yet," says he elsewhere, "the longer I live here, the better I like the place, and the people who belong to it." These last words explain the secret. He here met with the Unwin family, to a member of which, Mrs. Unwin, England is possibly indebted for one of its best poets. With them he took up his residence, and, on the death of Mr. Unwin, in 1767, removed with his widow to Olney in Buckinghamshire. In making that place their residence, Cowper and Mrs. Unwin had been influenced

by their esteem for Mr. Newton, the then curate of Olney. Mr. Newton, a man of great moral worth and powerful mind, was of the class called Evangelical, and to his guidance Cowper gave himself almost entirely up. When we consider Mr. Newton's own remark upon himself—"I believe my name is up about the country for preaching people mad!"—we need not wonder at the injurious consequences which Cowper derived from this "sincere but injudicious friend."* The poet's life for the next few years was spent in a state of almost continual religious excitement; nor were matters improved when Mr. Newton induced him to join in the composition of the 'Olney Hymns,' which the former was then preparing, for in 1772 came on the second attack of insanity, which lasted no less than four years. About the expiration of that time, Mr. Newton removed from Olney; and Cowper was induced by Mrs. Unwin to begin writing a poem, that lady giving him for a subject 'The Progress of Error;' and thus was produced his first important poem, and at the age of forty-five! 'Truth,' 'Table-Talk,' and 'Expostulation' immediately followed. Of the 'Table-Talk' he says, in a letter to Mr. Newton, dated February 18, 1781, "It is a medley of many things; some that may be useful, and some that, for aught I know, may be very diverting. I am merry that I may decoy people into my company, and grave that they may be the better for it. Now and then I put on the garb of a philosopher, and take the opportunity that disguise procures me to drop a word in favour of religion. In short, there is some froth, and here and there a bit of sweetmeat, which seems to entitle it justly to the name of a certain dish the ladies call a trifle. I did not choose to be more facetious, lest I should consult the taste of my readers at the expense of my own approbation; nor more serious than I have been, lest I should forfeit theirs. . . . . Whether all this management and contrivance be necessary I do not know, but am inclined to suspect that if my muse was to go forth clad in Quaker colour, without one bit of riband to enliven her appearance, she might walk from one end of London to the other as little noticed as if she were one of the sisterhood indeed."

In another letter† Cowper thus describes his favourite retreat at Olney, the place in which he composed a considerable portion of his poems:—"I write in a nook that I call my boudoir. It is a summer-house, not much bigger than a sedan-chair, the door of which opens into the garden, that is now crowded with pinks, roses, and honey-suckles, and the window into my neighbour's orchard. . . . Having lined it with garden mats, and furnished it with a table and two chairs, here I write all that I write in summer-time, whether to my friends or to the public. It is secure from all noise, and a refuge from all intrusion." Here, too, when disinclined for literary labour, he was accustomed to amuse himself with the freaks of three leverets, which he brought up with great care, and the last of which he lost only through old age, after twelve years' companionship. He has immortalized these animals in prose and in poetry, English and Latin; they have been represented in prints, and engraved on seals, and Cowper's account of them contains more interesting matter on the natural history of that timid but playful race than had ever before been contributed.

The poems before mentioned, together with some others written subsequently, were published in 1782, and another volume, containing the 'Task,' in 1785. This poem was, as is well known, commenced at the suggestion of another of Cowper's female friends, Lady Austen, to whom we are also indebted for the famous ballad of 'John Gilpin.' The translation of Homer was begun in 1784, and published in 1791. During its progress, Cowper had changed his residence from Olney to Weston, a neighbouring village, where was the seat of Sir George and Lady Throckmorton, who paid the most marked attention to the poet. By this time his reputation had become firmly established. An amusing proof that poets, if not prophets, are sometimes honoured in their own country, is furnished by one of Cowper's delightful letters to Lady Hesketh:—"On Monday morning last Sam brought me word that there was a man in the kitchen who desired to speak with me. I ordered him in. A plain, decent, elderly figure made its appearance, and, being desired to sit, spoke as follows:—'Sir, I am clerk of the parish in All Saints, in Northampton, brother of Mr. Cox, the upholsterer. It is customary for the person in my office to annex to a bill of mortality, which he publishes at Christmas, a copy of verses. You will do me a great favour, sir, if you will furnish me with one.' To this I replied,—'Mr. Cox, you have several men of genius in your town, why have you not applied to some of them? There is a namesake of yours, in particular, Cox, the statuary, who, every person knows, is a first-rate maker of verses. He, surely, is the man of all the world for your purpose.' 'Alas! sir, I have heretofore borrowed help from him, but he is a gentleman of so much reading, that the people of our town cannot understand him!' I confess to you, my dear, I felt all the force of the compliment implied in this speech, and was almost ready to answer, Perhaps, my good friend, they may find me unintelligible for the same reason. But, on asking him whether he had walked over to Weston on purpose to implore the assistance of my muse, and on his replying in the affirmative, I felt my mortified vanity a little consoled, and, pitying the poor man's distress, which appeared to be considerable, promised to supply him. The waggon has accordingly gone this day to Northampton, loaded in part with my effusions in the mortuary style. A fig for poets who write epitaphs upon individuals. I have written *one* that serves *two hundred* persons."

Almost immediately after the completion of the translation of Homer, he undertook to superintend a new and splendid edition of Milton's works. In 1792, for the first time for twenty years, he took a journey from home, in order to pay a visit to Hayley, at Eartham, in Sussex, a place of which Cowper says, "I had, for my part, no conception that a poet could be the owner of such a paradise." He was, however, soon glad to get home again. The symptoms of his disease were continually recurring, and in the beginning of 1794 he was again afflicted with all its worst horrors. He removed from place to place, till he stayed at East Dereham, in Norfolk, where the faithful companion and most devoted nurse of so many years, Mrs. Unwin, died. Three dreary years followed, when Cowper followed her to the grave, on the 25th of April, 1800. He was buried in St. Edmund's chapel, Dereham church; a very ancient collegiate edifice, of which Bonner was once the incumbent.

One of the most curious circumstances attending Cowper's malady was the unerring judgment he exhibited on all matters unconnected with religion,—the continual stream of playful humour running through his correspondence, at all but the very darkest periods of his life. Thus, in 1793, whilst he was suffering both by day and by night from what he called his "experiences" (which appear to have been insane dreams that possessed him between sleeping and waking), "such terrors as no language could express," and no heart but his own ever knew, he wrote a letter to Hayley, in which he describes a dream of a very different kind, in the following exquisite manner:—

* Southey. † To J. Hill, Esq.

"Oh, you rogue, what would you give to have such a dream about Milton as I had about a week since? 'I dreamed that, being in a house in the city, and with much company, looking towards the lower end of the room from the upper end of it, I descried a figure, which I immediately knew to be Milton's. He was very gravely but very neatly attired in the fashion of his day, and had a countenance which filled me with those feelings that an affectionate child has for a beloved father; such, for instance, as Tom has for you.' My first thought was wonder where he could have been concealed so many years; my second, a transport of joy to find him still alive; my third, another transport to find myself in his company; and my fourth, a resolution to accost him. I did so, and he received me with a complacence in which I saw equal sweetness and dignity. I spoke of his 'Paradise Lost' as every man must who is worthy to speak of it at all, and told him a long story of the manner in which it affected me when I first discovered it, being at that time a school-boy. He answered me by a smile and a gentle inclination of his head. He then grasped my hand affectionately, and, with a smile that charmed me, said, 'Well, you for your part will do well also.' At last recollecting his great age (for I understood him to be two hundred years old), I feared that I might fatigue him by too much talking, I took my leave, and he took his, with an air of the most perfect good-breeding. His person, his features, his manner, were all so perfectly characteristic, that I am persuaded an apparition of him could not represent him more completely." Who can read this, and resist the conclusion that judicious management of its author at an earlier period would have greatly lessened the miseries of his unhappy life, if it could not have altogether prevented them!

Yet, "sad as Cowper's story is, it is not altogether mournful," says his admirable biographer, Southey; "he had never to complain of injustice nor of injuries, nor even of neglect. Man had no part in bringing on his calamity, and to that very calamity which made him 'leave the herd' like 'a stricken deer' it was owing that the genius which had consecrated his name, which has made him the most popular poet of his age, and secures that popularity from fading away, was developed in retirement; it would have been blighted had he continued in the course for which he was trained up. He would not have found the way to fame unless he had missed the way to fortune. He might have been happier in his generation, but he could never have been so useful; with that generation his memory would have passed away, and he would have slept with his fathers, instead of living with those who are the glory of their country and the benefactors of their kind."*

* 'Life,' vol. ii., p. 318.

MUTUAL INTERESTS OF ENGLAND AND THE UNITED STATES OF AMERICA.

Out of every hundred foreign vessels which enter the ports of the United States of America, above eighty are from the United Kingdom and its dependencies, the number in 1836 having been 3510 (544,774 tonnage), and from all other countries 611. Nearly 1000 vessels sail yearly direct from the United Kingdom to the United States, and about 800 arrive direct in our ports under their star-spangled banner. The ships from our shores are chiefly freighted with manufactured goods, and the aggregate value of their cargoes is about 9,000,000*l.* annually. In 1836 the United States took more than any other country of our woollens, linens, silks, hardwares and cutlery, wrought and unwrought iron and steel, and several other articles; and we send them annually about one-sixth of our exported produce and manufactures. On the other hand we are the best customers for their domestic produce. Above six-tenths of their exports consist of cotton and tobacco, and in 1840 we took from them 453,000,000 lbs. of the former and about 28,000,000 lbs. of the latter. We should take a still larger proportion of their agricultural produce, if the importation of 'bread-stuffs' were not prohibited except under conditions which render the demand uncertain.

In 1740 the imports of New York from Great Britain were 72,390*l.*, and the exports amounted to 171,000*l.*; but in 1836 the value of the imports in that city was estimated at 23,000,000*l.*, of which, in that year, probably above 11,000,000*l.* consisted of British manufactures and commodities. A century ago these States, which now contain a population of sixteen millions, enjoying more abundantly than any other people the means of comfort and luxury, did not amount to one million; and in 1860 there can be little doubt that their numbers will exceed thirty millions, for the wild lands of the 'far west,' consisting of the most fertile soil in the world, admit of a vast increase of population; and until these lands are cultivated, the laws which limit the increase of the people in older countries will not be called into operation in the United States. These sixteen millions of our American brethren are already better customers for our manufactures than France and Germany with a population of seventy millions, and as the latter countries are approaching or have reached a state in which the progress of manufactures is more strikingly displayed than that of agriculture, they are becoming our rivals, while in the United States industry is most profitably employed in developing the resources of agriculture, and we, by our advancement in non-agricultural industry and arts, may materially assist them in the rapid creation of wealth from the cultivation of the soil. No policy can be truer to the best interests of both countries than that which tends to encourage their mutual commercial dependence; but strong as are the ties which unite them, their intercourse might be on a still grander scale. The following facts show the proportions in which their commercial interests are blended:—1, In 1821 the proportion which the trade with England bore to the whole foreign trade of the United States was 35 per cent., and in 1835 it was 41 per cent. 2, The proportion which the trade with the United States bore to the whole foreign trade of England was 17 per cent. in 1821, and 22 per cent in 1835. In 1805 the proportion was 28 per cent., but in the interval our aggregate trade with all other countries had increased in a greater ratio than that with the United States. 3, The proportion of British to American shipping which entered the ports of the United States averaged 9¼ per cent. annually from 1822 to 1830, but from 1831 to 1836 the average was 35½ per cent.

The suspension of friendly relations between these two great countries has recently been a topic of discussion. Could anything be more absurd and wicked than a war between them? Whatever political misunderstandings may have arisen, let them be settled by the calm decision of reasonable men in both countries, and not by a senseless destruction of property and resources, which, after exhausting the strength of both parties, would probably still leave the subject of quarrel a bone of contention. We trust that both in England and America the silent influence of the friends of peace will put down the noisy clamour of what is called the 'war party,' which appears to consist of only a small number of braggadocios.

THE CID.—No. VI.

"Dead the king Don Sancho lieth,—
Lo! where round his body kneel,
Sorely wailing, knights and nobles,
All the flower of Castille.
But my Cid Rodrigo Diaz
Most of all his loss doth feel.

Tears adown his cheeks come trickling
As he thus in grief doth say,—
'Woe is thee, my king, my lord!
Woe! woe for Castille that day,
When, in spite of me, Zamora
Leaguer'd was with this array!

Neither God nor man he feared,
Who to this did counsel thee;
Who did urge thee thus to trespass
'Gainst the laws of chivalry.'"



Then, turning to the surrounding nobles, he proposed that a challenge should be sent to Zamora before the sun went down. This he, by reason of his oath, could not offer, but it was undertaken by Diego Ordoñez, the flower of the renowned house of Lara, "who had been wont to lie at the king's feet." He rode up to the walls of the city, and cried with a loud voice,—

"'Lying hounds and traitors are ye,
All who in Zamora live;
For within your walls protection
To a traitor ye do give.

Those who shelter lend to traitors,
  Traitors are themselves, I trow;
And as such I now impeach ye,
  And as such I curse ye now.

Cursed be your wives and children!
  Cursed be your babes unborn!
Cursed be your youth, your aged—
  All that joy, and all that mourn!

Cursed eke be your forefathers,
  That they gave ye life and breath!
Cursed be the bread, the water,
  Which such traitors nourisheth!

Cursed be men, women, children!
  Cursed be the great, the small!
Cursed be the dead, the living—
  All within Zamora's wall!

Lo! I come to prove ye traitors—
  Ready stand I on this plain
Five to meet in single combat,
  As it is the wont in Spain.'

" Out then spake the Count Gonzalo—
  Ye shall hear what he did say:—
'What wrong have our infants done ye?
  What our babes unborn, I pray?

Wherefore curse ye thus our women?
  Why our aged and our dead?
Wherefore curse our cattle? wherefore
  All our fountains and our bread?

Know that for this foul impeachment
  Thou must battle do with five?'
Answer made he, 'Ye are traitors—
  All who in Zamora live!' "

Then said Don Arias, "Would I had never been born, if it be in truth as thou sayest; nevertheless, I accept thy challenge, to prove that it is not so." Then, turning to the citizens, he said, "Men of great honour and esteem, if there be among ye any who hath had aught to do with this treachery, let him speak out and confess it, and I will straightway quit this land, and go in exile to Africa, that I may not be conquered in battle as a traitor and a villain."

With one voice all replied,

"'Fire consume us, Count Gonzalo,
  If in this we guilty be!
None of us within Zamora
  Of this deed had privity.

Dolfos only is the traitor;
  None but he the king did slay.
Thou canst safely go to battle—
  God will be thy shield and stay.'"

Though the Infanta with tears besought Don Arias to regard his hoary head, and forego so perilous an emprise, he insisted that he and his four sons should accept the challenge, "because he had been called a traitor."

"'Deem it little worth, my lady,
  That I go forth to the strife;
For unto his lord the vassal
  Oweth wealth, and fame, and life.'"

The combat which ensued brings to mind the description given by Sir Walter Scott, in his 'Fair Maid of Perth,' of old Torquil and his sons in the battle between the Highland clans Chattan and Quhele. We must not, however, omit to notice a romance which describes the knighting of Pedro, one of the sons of Don Arias, previous to the battle. It tells us that after he had watched his arms before the altar, mass was sung by the bishop, who also blessed each piece of armour ere it was donned, and that the young squire was then dubbed by his father, who added some knightly counsel:—

"'Rise a knight, son of my bosom!
  A knight of noble race thou art;
That God make thee all thou shouldst be,
  Is the fond wish of my heart.

True and upright be to all men;
  Traitors shun thou and despise;
Of thy friends be thou the bulwark—
  Terror of thine enemies;

Firm in trial, bold in peril,
  Mighty in the battle-field.
Smite not, son, thy vanquish'd foeman,
  When the steel he cannot wield;

But as long as in the combat
  He doth lance or sword oppose,
Spare thou neither thrusts nor slashes,
  Be not niggard of thy blows.'"

The "fond wishes" of the old Count were, alas! soon disappointed, for on the first encounter with Don Diego Ordoñez, Pedro Arias was slain. Such was also the fate of his two brothers Diego and Hernan, but the latter, when mortally wounded, struck Don Diego's charger, which, furious with pain carried his rider out of the lists, so that the umpires declared it to be a drawn battle.

Bravely did the old Count bear up against his heavy loss, as is shown by a short but beautiful romance which describes the funeral procession of one of his sons. In the midst of a troop of three hundred horsemen was borne the corpse, in a wooden coffin:

"Five score noble damsels wail him,
  Of his kindred every one;
Some an uncle, some a cousin,
  Some bewail a brother gone.

But the fair Urraca Hernando,
  Deepest is her grief, I ween."

This was probably his true love, or it might have been the Infanta herself, who was his foster-sister. "How well," says the romance, "doth the old Arias Gonzalo comfort them!"

"'Wherefore weep ye thus, my damsels?
  Why so bitterly bemoan?
In no tavern-brawl he perish'd;
  Wherefore then so woe-begone?

But he died before Zamora,
  Pure your honour to maintain;—
Died he as a knight should die,
  Died he on the battle-plain.'"

It does not appear that Arias Gonzalo or his sons were in any way guilty of the treacherous murder of the king Don Sancho. Suspicion would rather attach to the Infanta Urraca, who, according to the Chronicle, had promised Bellido Dolfos whatever he might ask, if he would cause the siege to be raised. On the ultimate fate of this miscreant, further than that he was imprisoned by Don Arias, both Chronicle and romances are wholly silent.

THE SPRING FAIR AT PESTH, HUNGARY.

[From Spencer's Travels in Circassia.]

As I happened to be at Pesth during the great spring fair, I was not only provided with ample materials for amusement, but an opportunity of seeing the motley population of natives and strangers which are usually attracted on this occasion; for though the Magyars, who have given their name to Hungary, are the greatest landed proprietors, and hold the reins of government, yet they are inferior in numerical force to the Sclavonians (or Totoks), the original inhabitants. These are divided into at least half a dozen separate tribes, each speaking a different patois; and if to them we add the colonies of Germans, Wallachians, Greeks, Armenians, French, Italians, Jews, and Gipsies, speaking their own languages, and retaining their national man-

mers, customs, and religions, we may term Hungary a miniature picture of Europe.

My first lounge was through the fair, which afforded as many groups for the painter as for the observer of life and manners. The Babel-like confusion of tongues was endless; and the costume and appearance of the motley tribes could not have been equalled in variety by any other fair in Europe, or even by the most entertaining maskers that ever trod the Piazza San Marco, or the Corso at Rome; because here each performed his natural character. The most prominent figures in the group were ever the proud Magyars, particularly those just arrived from the provinces. The dress of some of these noblemen was indeed singular, consisting of a tight sheep-skin coat, or mantle, the woolly side inwards; while the other was gaudily embroidered all over with the gayest flowers of the parterre, in coloured silk, among which the tulip was ever the most prominent. Those whose wealth permitted it, were to be seen habited in their half-military, half-civil costume; and you might in truth fancy from their haughty demeanour, that you were beholding a feudal lord of our own country of the middle ages, as, mounted on their fiery steeds, and armed with sword and pistols, they galloped through the parting multitude, upon whom, when the slightest interruption occurred, they glanced with scorn and contempt.

Among crowds of Jews, Turks, Greeks, Armenians, Tyrolians, Germans, Sclavonians, Italians, and Hungarian peasants, were groups of gipsies, their black matted locks shading their wild sunburnt countenances, exhibiting their dancing-dogs, bears, and monkeys, or playing a lively tune for the amusement of the surrounding multitude, these itinerants being the popular musicians of Hungary. In another part of the fair, mountebanks on elevated platforms were relating the exploits of the famous robber Schrubar in the great forest of Bakony; or the ravages committed by the dreadful monster, half-serpent, half-flying dragon, that lately rose out of the Balaton Lake, together with the most veritable history of the reappearance of the renowned Merman, who had inhabited, for the last two years, his own extensive domain, the Hansag marshes. All these astonishing marvels, besides hundreds of others, were listened to by the peasants not only with attentive ears, but open mouths, and were illustrated by paintings as large as life, depicting the extraordinary wonders, executed in a style which set all imitation at defiance.

Bread, cakes, cheeses, vegetables, &c. were heaped on high in the streets, with the owners of each separate pile squatted in the midst. The savoury odour of frying sausages attracted some gourmands; whilst others feasted on the lighter refreshments of pastry which the accomplished *cuisiniers* were preparing for their gratification. But the popular viand was evidently the cray-fish, which all ranks, however otherwise engaged, were incessantly consuming; nor did they in this manifest any deficiency in *goût*, as the flavour of the little dainties was really excellent, and I have rarely seen them exceeded in size. Indeed, to thread the mazes of this great Hungarian fair, so as to obtain a view of its rarities, was an undertaking of no little difficulty, on account of the immense pyramids of wool, hides, tobacco, and other raw materials, which ever stood in the way; and as these articles were most tempting bates to the cupidity of the Jewish traders, they might constantly be seen making use of all their cajoling eloquence, while prevailing upon the artless peasant to dispose of his wares at a price little more than nominal. When, however, the case was reversed, and the gaudy merchandise of the Jew and Armenian traders induced the peasant to become a purchaser, the balance of trade was considerably against him.

But, perhaps, of all the groups over which my eye wandered, none more strongly arrested my attention than the Saxon colonists: these were attired in the same costume in which their ancestors, some centuries gone by, had emigrated from their father-land, their blue eyes and heavy quiet countenances forming a striking contrast to the vivid glances of the half-Asiatic people around them. Nor were their moral traits less distinctly defined; for the prudent German, well knowing he was in the society of some of the most accomplished pickpockets on the Continent, wisely determined that they should not prey upon him; he did not once remove his hand from his pocket, while his good woman never failed to keep watch behind, attended by her little ones, who, on the approach of the half-wild gipsy, timidly covered their flaxen heads in the many folds of mamma's cumbrous petticoat.

I would, above all things, recommend every traveller who may visit Pesth during the spring fair, not to leave it without taking a morning's ramble through the town. He will then see thousands of men, women, and children lying about the streets, beneath the piazzas, or in the numerous barks on the river, with no other covering save the canopy of Heaven and their own sheep-skin mantles: he will also, still more to his surprise, behold them anointing their persons with lard, in order to protect themselves during the day from the effect of heat, and the bites of vermin and insects.

In wonder all philosophy began; in wonder it ends; and admiration fills up the interspace. But the first wonder is the offspring of ignorance; the last is the parent of adoration. —*Coleridge.*

Cottages of Bengal.—The cottage of Bengal, with its trim curved thatched roof and cane walls, is the best looking in India. Those of Hindoostan are tiled, and built of clay or unburnt bricks; and though equally convenient, have less neatness of appearance. The mud or stone huts and terraced roofs of the Deccan village look as if they were mere uncovered ruins, and are the least pleasing to the eye of any. Farther south, though the material is the same, the execution is much better; and the walls, being painted in broad perpendicular streaks of white and red, have an appearance of neatness and cleanness.—*Mr. Elphinstone's History of India.*

Value of Thread for Lace.—The exquisitely fine thread which is made in Hainault and Brabant, for the purpose of being worked into lace, has occasionally attained a value almost incredible. A thousand to fifteen hundred francs is no unusual price for it by the pound; but some has actually been spun by hand of so exquisite a texture as to be sold at the rate of ten thousand francs, or upwards of 400*l.*, for a single pound weight. Schools have been established to teach both the netting of the lace and drawing of designs by which to work it; and the trade at the present moment is stated to be in a more flourishing condition than it has ever been known before, even in the most palmy days of the Netherlands.—*Mr. Emerson Tennent's Belgium.*

Game of Football, in Holborn or the Strand.—If the mob round the pillory was safely passed, there was another mob often to be encountered. Rushing along Cheapside, or Covent Garden, or by the Maypole in the Strand, came the football players. It is scarcely conceivable, when London had settled into civilization, little more than a century ago—when we had our famed Augustan age of Addisons and Popes—when laced coats, and flowing wigs, and silver buckles ventured into the streets, and the beau prided himself on

"The nice conduct of a clouded cane,—"

that the great thoroughfare through which men now move "intent on high designs" should be a field for football:—

"The prentice quits his shop to join the crew;
Increasing crowds the flying game pursue."

This is no poetical fiction. It was the same immediately after the Restoration. D'Avenant's Frenchman thus complains of the streets of London:—"I would now make a safe retreat, but that methinks I am stopped by one of your heroic games, called football; which I conceive (under your favour) not very conveniently civil in the streets, especially in such irregular and narrow roads as Crooked Lane. Yet it argues your courage, much like your military pastime of throwing at cocks. But your mettle would be more magnified (since you have long allowed those two valiant exercises in the streets) to draw your archers from Finsbury, and during high market let them shoot at butts in Cheapside." It was the same in the days of Elizabeth. To this game went the sturdy apprentices, with all the train of idlers in a motley population; and, when their blood was up, as it generally was in this exercise, which Stubbes calls "a bloody and murthering practice, rather than a fellowly sport or pastime," they had little heed to the passengers in the streets, whether they were passing by—

"a velvet justice, with a long
Great train of blue coats twelve or fourteen strong;"

or a gentle lady on her palfrey, wearing her "visor made of velvet." The courtier, described in Hall, had an awful chance to save his "periwinke" in such an encounter, when, with his "bonnet vail'd," according to the "courtesies" of his time,

"Travelling in along London way"

he has to recover his "auburn locks" from the "ditch" that crosses the thoroughfare.—*London.*



[Source of the Ravensbourne.]

RAILWAY RAMBLES.

THE RAVENSBOURNE RIVER.

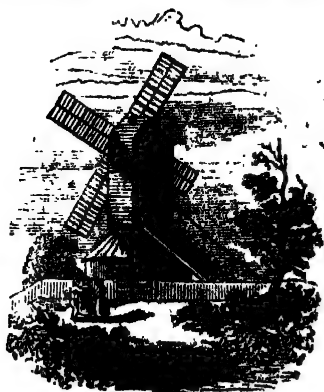


Sweet, fresh, and balmy as are the breezes, fair the skies, and tender the foliage of the youngest and gentlest of the seasons, Spring, yet how few of us seem to appreciate its peculiar loveliness; how few of us hurry forth to enjoy it where alone it can be enjoyed, by the green fields and hedgerows, or on the glorious heaths now revelling in all the splendour of the golden blossoms of the furze. The proverbial uncertainty of the season is probably the chief cause of its being so neglected; in fact, it must be owned that Spring is sometimes little better than a name with us: to-day it is summer, come before its time; to-morrow winter, still lingering when we thought we had fairly got rid of him for another year. But the less of the real spring we have, the more surely should we enjoy it when it is ours. Then let us not lose this bright morning, which seems to promise a beautiful day, but, leaving the town "buried in smoke and sleep,"

> "Wander o'er the dewy fields,
> Where freshness breathes, and dash the trembling drops
> From the bent bush, as through the verdant mass
> Of sweetbriar hedges we pursue our walk."

The Ravensbourne rises on Keston Common, near the border of Surrey, and flows northward past the town of Bromley and the village of Lewisham, and between the towns of Greenwich and Deptford, into the Thames. It turns several mills, and supplies Greenwich and Deptford with water by means of waterworks. It is navigable for nearly a mile up to Deptford Bridge for lighters and other small craft. The whole length of the Ravensbourne is about ten miles. The head of the Ravensbourne shall be our starting-point; its course from thence to the Thames at Deptford, our course: from Deptford we can return to the great town again by the Greenwich Railway, for we propose in these Rambles to use that magnificent mode of locomotion in whatever way may be most convenient to us, or to those who, interested in the scenes described, or the associations with which these scenes are connected, may honour us by personally wandering through the same routes. We therefore make no apology for commencing with a ramble *to* the railway before-mentioned, or in leaving the Elephant and Castle by the older, slower, but more picturesque conveyance. So the Tunbridge Wells coach sets us down by one of the lodge gates of Holwood Park, thirteen miles from London; from thence a road leads to Keston Cross, where there is a well-known inn, standing, it is supposed, on the site of some old cross, and which, with its host and ostler, has been commemorated by Hone in some of the rambles about London described in his 'Table-Book." At Keston Cross we turn to the left, and pass along a road bordered by wild-looking park plantations, where the graceful and feathery birch is seen rising to a considerable height, its slender stems frosted as it were with silver. At a short distance, the road, which has been gradually rising, opens upon a heath spreading away to a considerable distance on the right; on the left is Holwood Park, with the beautiful lodge, and in front the summit of the eminence known as Holwood Hill. Just at the foot of this hill the heath opens into a long hollow, where first we find the source of the Ravensbourne, and then three large artificial ponds formed by its waters. Beyond the latter its stream is so small as to be imperceptible to the eye as it flows through some broad meadows partially screened by plantations. Among the other features of this beautiful place, we must not omit to notice one of those picturesque objects, so characteristic of an English landscape, the windmill on the heath on our left, and the distant hills, yet bathed in the purple light of the morning, of Norwood and Forest Hill, beside which the great metropolitan dome may be often seen in front, and Shooter's Hill, Chiselhurst, &c. to the right. The history or tradition

of the origin of the Ravensbourne is thus described by Hone:—" When Cæsar was encamped here, his troops



[Mill, Keston Common.]

were in great need of water, and none could be found in the vicinity. Observing, however, that a raven frequently alighted near the camp, and conjecturing that it was for the purpose of quenching its thirst, he ordered the coming of the bird to be watched for, and the spot to be particularly noted. This was done, and the result was as he anticipated. The object of the raven's resort was this little spring; from thence Cæsar derived a supply of water for the Roman legions; and from the circumstance of its discovery, the spring was called the Raven's bourne or brook." The water was formerly in great repute for its medicinal virtues, and was used to bathe in. Till about the commencement of the present century there was a bathing-house, overhung with some very beautiful trees. The spring and the heath then formed the great objects of attraction to the gentry and other residents of the neighbourhood for some miles round: on a bright summer day, Keston Common (as the heath is called) might often be seen dotted, as it were, with parties of people, the gay costume of the ladies contrasted upon the brown heath, and the air ringing with the sounds of laughter and music. The crystal waters of the Ravensbourne now rise into the circular basin shown in our engraving, through small holes with which its bottom is entirely pierced: from the basin they flow through an opening near its top into a concealed trough, and then into the first of the ponds. It never stops, never dries up; it flows to-day as it flowed two thousand years ago, when Cæsar saw it bubbling up almost concealed in the brown heath. The Roman camp referred to in the tradition yet remains, for a part of its course, in excellent preservation. We pass towards it through Holwood Park, along a fine wild-looking dell known as the "Vale of Thorns," which leads up to the beautiful mansion of Holwood: before reaching the latter, however, we turn off to the left, where we presently find ourselves upon the outer of the three banks or bastions of earth which defended it, all now surmounted by lines of trees. The shape was irregular, and appears to have followed the course of the ground, which here forms a large elevated terrace. There is little doubt but this was the Roman station of Noviomagus. Roman bricks and tiles have been continually turned up by the plough, coins found, &c. Holwood House stands on the site of the mansion formerly inhabited by William Pitt, and in which, we have been informed, he had a room almost entirely hung round with the chief political caricatures of the day that had been levelled at him. An oak, with a short but immensely thick trunk, in the park, is known as Pitt's Oak: its shade was a favourite spot with him. The present mansion of Holwood is very handsome and large, and commands from its eastern front a most extensive and charming valley, bounded in the distance by the hills about Seven Oaks and Knowle.

From Keston Common, on and near which we have been so long tarrying, we walk across the fields into the high road towards Hayes, which presently takes us through another heath, also glowing with golden blossoms, and which some of the numerous flock of sheep interspersed abroad are nibbling off (dainty epicures) with a gusto that must gladden the heart of a poet to behold. The heath is soon exchanged again for a high road, but it is a very pleasant one, and bordered by a luxuriant foliage most of the way, and

> "Every copse
> Deep tangled, tree irregular, and bush
> Bending with dewy moisture o'er the heads
> Of the gay choristers that lodge within,
> Are prodigal of harmony."

Beautiful mansions too, here and there, with their extensive pleasure-grounds, and small cottages with



[Yew-tree in Hayes Churchyard.]

their little garden-plots in front, attract the eye, and remind us that summer monopolizes not all those beautiful tribe which form the poetry of the soil. Along the "blushing borders" we see—

> "The daisy, primrose, violet blue,
> And polyanthus of unnumbered dyes;
> The yellow wall-flower, stain'd with iron-brown,
> And lavish stock that scents the garden round;
> From the soft wing of vernal breezes shed,
> Anemones; auriculas, enriched
> With shining meal, o'er all their velvet leaves;
> And full ranunculus of glowing red."

The principal attraction of Hayes is its connection with the Pitt family, the elder having built the house, and the younger having been born here. Where they lived, the rooks, cawing so obstreperously in the trees which overhang the lofty wall on our left, tell us plainly enough. So attached was the great Earl of Chatham to the place he had built and adorned, that having sold it in 1766, when some other estate came into his possession, he could not rest till he had re-purchased it, which he succeeded in doing in 1768. All the latter years of his life were spent here, the improvement of Hayes forming his chief occupation. The church opposite is a curiously old and patched building—flints, bricks, and stone huddled together; old windows closed up here, and new ones opened there. After Chatham's funeral, the flags used on that occasion were set up in Hayes Church, and there left till they rotted away. No vestige of them, no tablet, no inscription, reminds you, as you walk through the church, of the distinguished man, who had doubtless so often worshipped in it. The churchyard is quite a model of the rustic old English burial-place, with its long luxuriant grass, and quiet-looking pleasant aspect. In the corner is a magnificent yew, the entire body of which is gone, leaving but a mere shell split into two or three parts, yet putting forth a noble array of branches and leaves, as though it had but now reached its prime. Of its age we should not like to venture even a guess, it must be so very old. We have given a representation of this tree in the preceding page.

[To be concluded in an early number.]

POST-OFFICE DISPATCH IN 1717 AND IN 1841.

THE RAILWAY POST-OFFICE.

The General Post-Office in London, if viewed in relation with the system of which it is the focus and centre, is one of the most interesting establishments in the metropolis. That system, directed and conducted within those extensive ranges of apartments and spacious offices, is so complete in its organization, that it maintains not only the means of communication with every part of the habitable globe, but also, when called upon, with any individual in any part of it, and that with a rapidity and certainty truly admirable. In a couple of weeks a letter committed to its care is safely delivered in New York, or, in six weeks, at Bombay; and thus distant communities and individuals, separated from each other by half the circumference of the globe, are assisted in their mutual co-operations, and may combine their efforts in the most advantageous manner in all those commercial undertakings which are so essential to the happiness and prosperity of civilized man.

The machinery in daily operation in London for affording the means of communication with other parts of the United Kingdom, could only perform its required functions by great energy and activity and the most admirable division of labour. On a Saturday, when the number considerably exceeds the average of other days, there are not far short of a hundred thousand letters and as many newspapers dispatched, and nearly the whole of them are received after five o'clock. They are collected from about two hundred and seventy receiving-houses, situated within a distance of three miles, and from above two hundred others beyond that distance, but within a circle of twelve miles of the General Post-Office. The letters posted in the outer circle are brought in on horseback and in mail-gigs, and those from the inner circle by mail-carts, or by the letter-carriers, about two hundred and seventy in number, who go with a bell through their respective districts and collect the letters which were too late for the receiving-houses, and afterwards hurry off with them to the General Post-Office. There are several branch offices, centrically situated in different parts of the metropolis, which do not close until six, and the letters posted there do not reach the principal office until about twenty minutes past six. The boxes at the central office close also at six, but a very large number of letters are received from that hour until seven, on payment of one penny; and a small number from that time until half-past seven for the fee of sixpence. Thus the great exertions for effecting the dispatch of the mails are crowded into the two or three preceding hours, during which the Inland Office is a scene of extraordinary bustle and activity. The appearance of the large hall through which the public pass is lively and animated beyond description, and those who cannot obtain a sight of that which is passing within the interior, will be interested by the scene which is presented without, especially at a few minutes before six, when files of newsvenders' men and boys are incessantly arriving with their sacks, and the letter-boxes are still more numerously thronged. The moment of closing the letter-boxes and newspaper window (except on payment of a fee) has only become "a scene" or "a sight" since the reduction of the stamp-duty on newspapers, in 1836, and the adoption of the uniform rate of postage. Since the former of these periods the circulation of the London newspapers (one-third of which are sent into the country) has increased 35 per cent., and the number of letters, since January, 1840, has increased above 150 per cent.

Each of the hundred thousand letters is, in the first instance, placed with the address uppermost, and is then stamped by hand at the rate of two hundred per minute. They are then sorted into masses, according to the great lines of road, at the rate of thirty per minute, and often three hundred persons are employed in afterwards sorting them for each of the seven hundred places for which bags are made up. The newspapers merely require to be faced and sorted, and the uniform rates of postage, instead of the complex system of charges by distances, have greatly facilitated the business connected with the dispatch of the mails. Every letter and newspaper, however, passes more than once through the hands of the sorters; but, at the appointed time, to the very minute, the work is finished, and the bags are sealed. They are placed in large leathern sacks, and, as the clock strikes eight, are dragged into the Post-Office yard, and put into the mails and mail-carts. Since so large a bulk of the correspondence of the kingdom has been conveyed by railway, the bags have been taken to the railway stations by omnibuses, and nine of these vehicles now stand on the spot where the old Edinburgh, the Glasgow, the Holyhead, the Manchester, Liverpool, and other "crack" mails of the day once drew up with their gallant teams. The total weight of the newspapers and letters dispatched on a Saturday night, and including the bags, is above eight tons, and we should imagine that at least five tons

are dispatched by railway Each newspaper weighs, on an average, two ounces, and newspapers constitute between sixty and seventy per cent. of the total dispatches, the letters about twenty per cent., and the bags make up the remainder of the weight.

The north of England, the whole of Scotland, and the greater part of Ireland, with parts of Wales, are connected with London by means of the Birmingham Railway; and four out of the nine omnibuses or post-office accelerators are loaded with the correspondence for those parts of the country and for Birmingham and intermediate and collateral places; three proceed to the station of the South-Western Railway, with the correspondence for all parts of Hants and the western counties; and the correspondence for Bristol and intermediate and surrounding places, also for South Wales and the south of Ireland, is conveyed in two omnibuses to the station of the Great Western Railway at Paddington. Two accelerators await the arrival of the morning-mails at each of the three stations, and bring the bags, in the care of guards, to the General Post-Office. The accelerators in connection with the Birmingham Railway proceed to the Euston Square station, which they reach in about eighteen minutes, and are driven into a part of the premises not accessible to the public, each being attended by a mail-guard, seated inside. The railway servants immediately carry the large sacks to a huge-looking machine, which, with an accompanying tender, is the last of a long train of carriages. This caravan is the Railway Post-office. In ten or twelve minutes the omnibuses are emptied of their contents, and the train of carriages is then wound up to the station at Camden Town, where the engine is attached, and the Primrose Hill tunnel soon prevents us hearing the thunder of their rapid progress.

The Railway Post-office is a carriage sixteen feet long, seven and a half feet wide, and six and a half feet high, and is fitted up as a sorting-room, with counters and desks, and tiers of neatly-labelled boxes or pigeon-holes. While the train is moving at a rate which occasionally exceeds thirty miles an hour, two clerks are coolly engaged in sorting letters and arranging letter-bags, and while maintaining the same speed, letter-bags belonging to towns on or near the line are taken up by an ingenious contrivance, which is the invention of Mr. Ramsey, of the General Post-Office. The bags to be taken up are hung upon a beam close upon the line, and on being detached from it, as the train passes, fall into a net spread out from the exterior of the Railway Post-office, while the bags to be delivered are simply dropped into the road. The letter-bag so taken up is opened, and its contents sorted. Thus a bag taken up at Watford may contain letters for Leighton Buzzard, or for other places northward. These letters are distributed in the boxes labelled with the names of the towns for which they are destined, before reaching which the letters are collected and put into the proper bag, which is left while at full speed at many of the stations. If the engine did not stand in need of a supply of water, and passengers were not leaving the line at the different towns, the post-office business would scarcely require any stoppages. The time allowed cannot exceed three minutes at some of the stations, at some five, and at others ten minutes are allowed, but at Birmingham, which is so important a central point, the train stops half an hour.

The correspondence for Leicester, Nottingham, Derby, Rotherham, Sheffield, Leeds, Hull, York, Darlington, and for the districts which surround each of these places; also for Edinburgh and the east of Scotland, with intermediate places, is detached at Rugby, eighty-two miles from the Euston Square station, the lines of railway from thence being opened to Darlington, 264 miles from London, which is reached by a quarter past nine in the morning, or twelve hours and three-quarters after leaving London. This great north-eastern line has various branches, there being one to Nottingham, one to Sheffield, one to Leeds, and one to Hull. The letter-bags are under the care of guards, who leave and take up bags only where the train stops.

The Railway Post-office, with the clerks, continues its route to Birmingham; thence by the Grand Junction Railway to Parkside, where the Liverpool and Manchester, and part of the Irish correspondence, is detached, and conveyed by the railway between those towns. From Parkside, which is on the Liverpool and Manchester Railway, the line northward is continued by the North Union Railway to Preston, and thence by the Preston and Lancaster Railway to Lancaster, distant 241 miles from London, and which is reached in eleven hours and a half, or before eight o'clock in the morning. The clerks are occupied during the whole night in taking up and delivering bags, and in sorting their contents. At ten stations the bags are dropped or taken up by means of the bag-apparatus, at two this is effected by hand without stopping, and at nineteen others the train stops. The number of stations between London and Lancaster is thirty-one, and it is necessary to observe great regularity in the rate of travelling, to prevent confusion in the operations which are all the time going forward in the post-office. The distance between these stations averages about eight miles: one station is eighteen miles distant from any other, and one is only three miles and a quarter. Every twenty minutes, therefore, on an average, bags are to be left and taken up, and extraordinary care and vigilance must be required to perform all the necessary operations, and, under such circumstances, without failure and error. The number of clerks employed in the department of the Railway Post-office is eighteen. Eight work between London and Birmingham, and ten between Birmingham and Lancaster. The night-work is performed by twelve clerks; and the correspondence by the day-mails not being so heavy, the services of six clerks only are required. Bags are made up in the night-office for above fifty different towns, and in the day-office for about forty. The gross number of bags received in one day by both offices is, we understand, nearly five hundred, containing on an average about twenty thousand letters. Both the day and night mails start respectively from London and Lancaster within two or three hours of each other, and should therefore meet somewhere about midway between the two places: and as the journey occupies twelve hours, there is consequently always one up and one down mail on the railroad. The distance between London and Lancaster is performed in nine hours and a quarter, exclusive of stoppages. The railway here terminates, and the letter-bags for Glasgow and the west of Scotland and intermediate places, and for the north of Ireland, are conveyed by the mail-coaches.

The principle by which the charge for conveying the mails by the different railways should be determined, involved at first many difficult considerations. As the question has been settled, the Post-Office neither contributes towards the interest of the capital expended in the first construction of the railway nor its repair, nor towards any expenses connected with the heavy traffic. The amount of capital invested in the necessary buildings, engines, tools, &c. for the passenger and light goods traffic was ascertained, and allowance was made for a return of profit upon such capital to the amount of six per cent., to which one and a half per cent. was added for wear and tear. The sum thus obtained was next divided by the number of trips annually required by the Post-Office, and the amount

per trip again subdivided, so as to apportion to the Post-Office that part only of the expense which arose out of conveying the gross weight taken on its account, the calculation being made on the average weight of a passenger-train, exclusive of the engine and tender. The railway companies appear to have acted in a liberal spirit in coming to this arrangement, the result of which is that the Post-Office pays only for the weight of its own carriage and the contents. The weight of the Railway Post-office, with the tender, bags, clerks, &c., is stated by Mr. Wishaw, in his work on Railways, to be above nine tons.

In a few years the transmission of the mails by the railways will have become so general, that scarcely a single mail-coach will be required from London. In 1837 there were twenty-seven which left nightly, travelling above 5500 miles in the aggregate before they reached their respective destinations. It is impossible to have witnessed their disappearance one by one without a feeling of regret. There are but ten now left, two of which are only pair-horse mails; and several mails will be superseded before the summer is over. The number of miles travelled by the direct and cross-road mails, in 1837, was upwards of 6,500,000 miles, or above 260 times the circumference of the globe. The English mail-coach was indicative of the national energy and spirit, and also of the taste of a large number of our countrymen, in the gratification of which many were tempted to make exertions by which the public were the gainers rather than those who engaged in mail and stage coach speculations. The means of intercourse reached a state of perfection which we may safely assert will never be paralleled. Some of the mails travelled at the rate of twelve miles an hour exclusive of stoppages, and yet this headlong rapidity, which became inseparably associated with the transmission of letters, commenced only towards the close of the last century, previous to which the average progress of the mails did not amount to four miles an hour; and those from London, instead of starting to a minute, and being timed by chronometers, left at a period ranging from one to three o'clock in the morning. Mr. Palmer was the means of reforming this lazy system. The obstacles which he encountered are set forth in grave 'Parliamentary Reports,' and at this day appear to us as inconceivable as they are amusing. The Post-Office authorities seem then to have been as anxious to put on the drag as their successors have been to render the mails punctual and rapid. One of the former, Mr. Hodgson, "did not see why the post should be the swiftest conveyance in England." This was in 1797. Mr. Draper, another gentleman employed in the Post-Office, declared that "the post cannot travel with the same expedition as chaises and diligences do, on account of the business necessary to be done at the office in each town through which it passes;" and he objected to coaches as travelling too fast. Mr. Palmer proposed to allow the guard a quarter of an hour at the different post-towns; but this was not enough in Mr. Draper's opinion, and half an hour would be required in many places. Would that Mr. Draper could have taken his seat in the Travelling Post-office some night on its journey to Lancaster! Mr. Palmer's theory of accelerating the mails appeared worthless in the eyes of Mr. Hodgson, because it was founded on an "impossibility," which consisted in supposing "that the Bath mail could be brought to London in sixteen or eighteen hours." These worthy gentlemen must have regretted most affectionately the good times when the mail conveyance, instead of being hurried at what in their day was the unparalleled rapidity of eight miles an hour, travelled at the leisurely rate shown by the following 'time bill' for the year 1717, when four miles an hour were performed, exclusive of stoppages. There was a notice at the head of this way-bill, signed by Lord Cornwallis, the postmaster-general, urging postmasters and others to use "all diligence and expedition."

"To the several postmasters betwixt London and East Grinstead.

Haste, Haste, Post Haste!

Miles.	
	From the Letter-office in London, July 7th, 1717, at half an hour past two in the morning.
16	Received at Epsom, half an hour past six, and sent away three-quarters past. Alex. Findlater.
3	Received at Leatherhead a quarter past seven, and sent away half an hour before eight. Ed. Badcock.
5	Received at Dorking half an hour after eight, and sent away at nine. Chas. Castleman.
6	Received at Rygate half an hour past ten, and sent away at eleven. John Bullock.
16	Received at East Grinstead at half an hour after three in the afternoon.
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46	

At the above rate, a letter dispatched from London on Monday night at eight o'clock, instead of reaching Lancaster at eight o'clock on Tuesday morning, would not arrive until Thursday afternoon at four o'clock. A letter may now be written from London on one day, and an answer to it received from Lancaster on the *following* day. In 1717, and indeed long after that period, exactly a *week* would have been required before this desideratum could have been accomplished.

Climate of Rome.—The temperature of Rome is generally mild and genial; frosts occur in January; but the thermometer seldom descends lower than 26° of Fahrenheit, and the midday sun generally produces a thaw. The tramontana, or north wind, sometimes however blows cold and piercing for days together. Snow falls at times, but it seldom remains on the ground for more than a day. Orange-trees thrive in the open air, but lemon-trees require covering during the winter months. Rains are frequent and heavy in November and December, but fogs are rare. In the summer months the heat is at times oppressive, especially when the sirocco, or south wind, blows. The hour which follows sunset is considered the most unwholesome in summer, and people avoid exposure to the open air.—*Penny Cyclopædia.*

A Slavonian Village.—We might have traversed a space of eight English miles, pausing from time to time to look round from the eminences that came in our way, when a Slavonian village, the first of the sort which we had seen, appeared in the distance. It reminded me more of the wigwams which I have seen inhabited by slaves in Jamaica, than of any settlement of labourers in any quarter of civilized Europe. It was a mere hamlet; containing, perhaps, some twenty huts, all of them circular in their form, and thatched over with straw; and as they stood apart one from another, there needed but a small stretch of the fancy to regard them as the dwelling-places of Negroes. But the figures which passed to and from them—how shall I describe these? Their loose trowsers and short cloaks, their hats, broad in the brim, yet sharp and high in the crown, came upon us at first with an effect so strange that I know not in what terms to define it. Had we been standing in any other situation than under the burning sun of a July day, I could have fancied that we had fallen suddenly among a body of Esquimaux. And then their tools—their three-pronged spades, with handles twelve feet long at the least; their rude litters for the conveyance of corn-sheaves, their rakes, their hoes, fabricated on the exact model of the classics—and their ploughs, mere beams of timber put together in the most unworkmanlike manner; all these were so different from the implements made use of elsewhere, as more and more to impress upon us an assurance that at length our craving after the novel in human society would be gratified.—*Gleig's Hungary.*

A DAY AT A SUGAR-REFINERY.



[Interior of a Su[gar-Refinery.]]

If it were allowable to personify the east and west ends of London, we might consider them as strangers who have occasionally heard of each other's existence, but who, from the wide interval between them, have had little mutual acquaintance. The dweller at the 'court end' of the town may, perhaps, have heard of 'Aldgate Pump,' as a spot remotely east, beyond the regions of the Bank, the Exchange, and the Mansion-House; and may, without the aid of a map, be in some doubt as to what exists still farther eastward. But he who would form an adequate idea of the metropolis in all its length and breadth, must be prepared to hear of a vast population,—a very world of human beings,—beyond the point to which we allude.

It is to this eastern district, and to one particular part of it, that we beg to direct the reader's attention in the present article. Most persons have heard of the occupation of a sugar-refiner,—often, though erroneously, termed sugar-baker,—that is, one who prepares the white conical lumps or loaves of crystallized sugar familiarly known as 'loaf-sugar.' Now, the buildings or 'refineries' in which this operation is carried on are not only situated in the east of London, but most of them are congregated within a circle of half a mile radius immediately eastward of Aldgate. Those who would seek for a reason why so many members of one trade or manufacture settle near each other, may be reminded that Oriental bazaars exemplify this custom to a remarkable extent, and that the object is principally to afford facilities to purchasers. At Constantinople, Bagdad, and other Eastern cities, each of the principal trades has its own bazaar,—one for jewellery, one for silks, one for spices, and so forth; and purchasers know at once what part of the city to visit when any commodity is required. In London, the admixture of trades and professions in most trading streets is now such, that the bazaar method is little observable; but still, whoever notices the assemblage of sugar-refiners in the neighbourhood of Goodman's Fields, the wool-combers in Bermondsey Street, the coach-makers in and near Long Acre, the watch-makers in Clerkenwell, the statuaries in the Paddington Road, and many similar instances, will not fail to observe indications of this custom, and to attribute it to some sufficient motive. Proximity to docks and warehouses furnishes a principal motive in the first-mentioned instance. Whether the sugar-refineries have, ever since their introduction into England, been located in this district, we do not exactly know, but should deem it very probable. Stow, in the following remark, does not make mention of any particular part of London:—"About the year 1543 refining of sugar was first used in England. Then there were but two sugar-houses; and their profit was but little, by reason there were so many sugar-bakers in Antwerp, and sugar came thence better and cheaper than it could be afforded at London. And for the space of twenty years together these two sugar-houses served the whole realm, both to the commendation and profit of them that undertook the same.'

Sugar-refineries have certain peculiarities in their external appearance, whereby they are distinguishable

from most other factories; they are very lofty, consist of an unusual number of floors or stories, and are lighted by rather small windows. In the sugar-refinery of Messrs. Fairrie, which we have recently visited, these peculiarities are very observable. In making the circuit of the buildings we reckoned nearly two hundred windows, most of them small, and some at such a height as to have seven floors or stories between them and the ground. The interior, too, has something peculiar in its appearance, arising from the shallowness of the rooms compared with their great extent; these rooms are very numerous, nearly square, and no higher than is absolutely necessary, since the chief desideratum in a sugar-refinery is a large extent of flooring. The greater part of this building is formed of iron, brick, and stone; a very necessary precaution against fire, on account of the inflammable nature of the substance prepared therein.

Most readers are probably aware, that 'lump' or 'loaf' sugar,—a holiday luxury to the middle classes, and, hitherto, an unattainable one to the humble,—is prepared from common brown sugar by a refining process, and that this process is conducted in the buildings to which we have alluded. In describing the mode of operation, we shall not find it necessary to trace the history of sugar in its previous states; but still a few remarks thereon will aid the object in view, by showing the successive conditions or forms in which the sugar is presented.

In our fourth number will be found a representation of the West Indian sugar-cane, from which the supply of sugar is obtained. "A field of such canes," says Mr. Beckford, "when standing in the month of November, when it is in arrow or full blossom, is one of the most beautiful productions that the pen or pencil can possibly describe. It commonly rises from three to eight feet or more in height, a difference of growth that very strongly marks the difference of soil or the varieties of culture. It is, when ripe, of a bright and golden-yellow; and where obvious to the sun, is in most parts very beautifully streaked with red. The top is of a darkish-green; but the more dry it becomes, from either an excess of ripeness or a continuance of drought, it assumes a russet-yellow colour, with long and narrow leaves depending; from the centre of which shoots up an arrow, like a silver wand, from two to six feet in height, and from the summit of which grows out a plume of white feathers, which are delicately fringed with lilac dye, and indeed is, in its appearance, not much unlike the tuft that adorns this particular and elegant tree." Such is the external appearance of the plant yielding the sugar-juice; and in the article to which we refer above, will be found a brief account of the mode in which the canes are cut and crushed, and of the subsequent transformation of the juice thence obtained into the form of moist or brown sugar, until it is finally packed in hogsheads and exported. It is first a juice expressed from the cane: then a kind of syrup, from which impurities have been removed; and, lastly, a brown granulated substance, from which a considerable portion of molasses, or uncrystallizable sugar, has been removed.

The ponderous sugar-hogsheads which we notice at the shops of the retail grocers contain moist sugar somewhat resembling in quality that which is imported by the refiner, but with a finer and softer grain. This sugar, as every housewife familiar with the qualities of 'sevenpenny' or 'eightpenny moist' is aware, has various shades of brown colour, according to the quality; and the principal cause of this colour is that a quantity of black molasses, or treacle, which formed part of the original cane-juice, is still mixed up with the crystallizable parts of the sugar,—not having been wholly removed by the processes to which the cane-juice is subjected before importation. The particles of sugar in their pure state are white; and to present them in this white crystalline form is the object of the sugar-refiner, who adopts means for expelling the molasses, and also certain impurities which are incorporated with the brown or Muscovado sugar as imported in the hogsheads.

It seems probable that the art of refining sugar was first introduced into Europe by the Venetians, and was practised in Venice some time before it was adopted in any other European country. The foul and black sugar brought from Egypt, at the end of the thirteenth century, was the first material upon which the art of the refiner was employed. The Venetians, in their first attempts, converted the dark moist sugar into sugar-candy; but they soon sought to obtain refined or crystallized sugar by a quicker and more profitable process; which they at length effected by the use of conical moulds, such as have ever since been used. From Venice the art passed into various European countries; and since America has been so fertile in the production of sugar, refineries have increased to a considerable extent in England and other countries.

Let us suppose, then, that a hogshead of moist sugar, imported from abroad, is brought to a refinery, and let us follow it through the routine of processes till it assumes the form of a conical lump of white sugar. This will enable us to describe the uses of the various buildings and rooms forming a large sugar-refinery; taking as our guide that of Messrs. Fairrie, Brothers, and Co., situated nearly behind Whitechapel Church, and which, through the liberality of the proprietors, we have been enabled to inspect.

This refinery consists mainly of two ranges of buildings, in the eastern of which the earlier and in the western the later processes are conducted. The hogsheads of sugar, having been brought in waggons from the docks to the east side of the refinery, are hauled up by a crane, and drawn in at an open door to a large square room. This was the first part of the building which we visited, and a busy scene it presented; here, was a hogshead of sugar, suspended from the crane, and just on the point of being drawn into the warehouse; there, was another hogshead, deposited on a low iron carriage, and being wheeled farther inwards; near it was a third, being weighed,—a process requiring tackle of no slight kind, since the hogsheads, when filled, vary from four to eighteen cwts. each; farther on was a man knocking out the head of a hogshead, and a party of others emptying the contents on a boarded floor; while other hogsheads, some empty and others full, were lying around in various directions. Our frontispiece represents the appearance of these objects

The sugar, when about to be operated on, is transferred from the hogsheads to a wooden floor, from whence it is shovelled into large circular vessels called 'blow-up cisterns.' If we gave a literal acceptation to technical terms, we should sometimes smile, and at other times feel a little alarm: in the present case it appears that the name is given in allusion to the mode in which steam is admitted to the contents of the vessels. The cisterns are six or seven feet in diameter, and about five in height; and the purpose for which they are employed is to dissolve the sugar preparatory to the removal of earthy and other impurities with which it is contaminated. The reader must bear in mind that notwithstanding the purifying processes whereby cane-juice is converted into brown sugar, there are still three kinds of substances which require to be removed from this sugar before the white crystalline state can be obtained, viz., earthy and other impurities, colouring matter, and molasses; and that very distinct processes are resorted to in order to effect

the removal. To remove the impurities is the first object. The sugar is, as before stated, thrown into the 'blow-up cistern;' and water is admitted to it from a cistern at the top of the house, which supplies every part of the establishment, and which is, in its turn, supplied from a well nearly two hundred feet deep, worked by a steam-engine. Into the cistern containing the sugar and water is pumped a small quantity of lime-water. A steam-pipe, in communication with a boiler at the east side of the building, is enclosed within the 'blow-up cistern;' and apertures being opened, steam is forced or 'blown' by its own pressure into the solution, by which the latter becomes heated in a very short space of time. This is one of the many instances in modern manufactures illustrative of the advantages derived from the use of steam as a heating agent. The water in the 'blow-up cistern,' being heated by the steam, dissolves the sugar, aided by constant stirring by means of long poles or oars. The lime-water, which aids in this process, is brought from vessels situated in the eastern part of the premises: they are casks broader at the bottom than the top; and the lime being dissolved in water and stirred till a milk-like fluid is produced, the lime-water is pumped from them as wanted.

This part of the process is one in which great improvements have been made of late years: indeed the same, to a certain extent, may be said of nearly all departments of the refining business. Under the old mode of proceeding, the sugar was dissolved in lime-water over an open fire, whereby it was subjected to a variable temperature injurious to the quality of the sugar; the clarification was effected by the admixture of a large quantity of bullock's blood, and a scum several inches in thickness was allowed to collect on the surface of the vessel containing the sugar, and was thence removed by a broad skimmer. As an illustration of the effect of the albuminous refining substance, *i.e.* the blood, we may refer to the action of hot water on the white of an egg, which is almost pure albumen; the white coagulates, or becomes solid, in two or three minutes. If any liquid containing albumen be mixed in another liquid and heated, the albumen, in the act of solidifying, collects together in a sort of film, and in so doing appears to entangle most of the solid impurities floating about in the liquid, removing them from the liquid generally. This having been repeated two or three times, the solution of sugar was allowed to flow through a wooden channel into an oblong basket covered with a blanket, through which it filtered into a cistern below, carrying a considerable portion of impurity with it. But in the process which we witnessed, the desired effect is produced in a much more efficacious manner: for the temperature of the solution is not greater than that of boiling water, and the offensive clarifying ingredient is almost entirely dispensed with, the process of clarification, or the removal of impurities, being principally effected in the next process. The saccharine solution,—called, in the language of the refinery, 'liquor,'—is, in this case, not skimmed at all: but at a certain stage in the operation, it is allowed to flow from the 'blow-up cistern' into a range of filtering-vessels in a room beneath; into which filters it enters as a thick, opaque, blackish liquid, and leaves them in a beautifully transparent state, though coloured of a reddish hue. The arrangement of these filters is exceedingly ingenious. Several cast-iron vessels about six feet high, each contain sixty cloth tubes, about three inches in diameter, attached to short metallic tubes which are screwed to circular holes in the upper part of the vessel, and hanging vertically downwards. Each tube contains a large bag, made of a close kind of cotton cloth, and coiled up so as to make the whole a compact mass of cloth; and the bags being each two feet wide and six feet long, it is easy to calculate that there are nearly fifteen hundred square feet of cloth comprised in each filtering-vessel. The 'liquor,' then, flows from the 'blow-up cisterns' into a shallow vessel to which these tubes are attached, and thence through the bags contained in the tubes. The bags being closed at the bottom, no outlet exists for the liquid except through the meshes or interstices of the cloth; and as the cloth forming each bag is doubled and re-doubled in its tube, the liquid finds its way between the plies or folds of the cloth, and finally exudes in a transparent state. The whole of the impurities, with the exception of a little colouring matter, are retained by the bags and tubes, while the saccharine liquor passes through.

It must be evident that the impurities left in the bags would soon clog the meshes if not removed. At intervals, therefore, the tubes are unscrewed, and taken out to a washing-yard, where the bags are drawn out, the impurities removed, and bags and tubes thoroughly washed. These impurities still contain a small portion of saccharine matter, which is subsequently extracted from them by boiling and other processes; and the spent residue is finally sold as manure, for which it possesses valuable qualities.

The next point in our visit was to the rooms in which the process of decoloration is carried on. The reader will bear in mind that the state to which we have traced the sugar in its progress is that of a transparent liquid having a reddish tinge. To remove this tinge, without interfering with the transparency of the liquid, is the next object of attention, and charcoal is the agent which modern inquiry has shown to be best fitted for this purpose. It has been long known that common wood charcoal possesses the property of removing, more or less, the odour proceeding from animal and vegetable substances in a state of decomposition; but it was also discovered by the German chemist Lowitz, that the same substance will remove the colour from common vinegar and several other liquids: a fact which soon afterwards led to the employment of charcoal in the clarification of various pharmaceutical preparations, and as an auxiliary in the refining of sugar. About thirty years ago, M. Figuire, of Montpellier, ascertained the additional important fact, that charcoal obtained from animal substances is not only equally efficacious when used in considerably smaller proportion than vegetable charcoal, but that it is capable of decolouring many liquids on which the latter has no sensible effects whatever. The sugar-refiners immediately availed themselves of the knowledge of this fact; and since that time many different modes have been adopted of employing animal charcoal in refining.

What is meant by animal charcoal is the earthy and carbonaceous portions of *bones* obtained by burning them in retorts: certain other ingredients in the bone are driven off by the heat, leaving an intimate mixture of phosphate and carbonate of lime with carbon, which then obtains the name of animal charcoal. It is not well known in what manner charcoal acts on the colouring particles of bodies: but Mr. Aikin, in one of his Lectures, makes the following remarks on the comparative action of vegetable and animal charcoal: "It is certain that the more finely divided any given weight of charcoal is, the more powerful is its decolouring effect: and thus the inferiority of those kinds of charcoal that break with a glossy fracture, when compared with those of a dull fracture, is accounted for: the particles of the former being assumed to be nearly solid, and those of the latter to be porous, or, in other words, more minutely divided. In bone or animal charcoal the carbonaceous particles are separated from

each other by the large quantity of earth with which they are mixed: and hence the superiority of this to vegetable charcoal resolves itself into a case of very minute division." These points, however, are not yet settled.

We return, then, to the operations on the sugar, which we had traced through the filtering-bags. All the liquor, as it leaves the filters, flows through pipes into other parts of the building occupied by charcoal-cisterns, each of which is a square vessel, four or five feet in height, and provided with a double bottom, the upper one being perforated with small holes. On this perforated bottom a piece of cloth is laid, and on the cloth a layer of powdered animal charcoal, or 'bone-black,' nearly three feet in thickness. The saccharine liquor flows on the surface of this charcoal bed, through which it slowly finds its way, percolating to the bottom, then through the meshes of the cloth, and lastly through the perforations into the vacant space beneath. The effect of this filtration is very striking; for the liquor, which, though transparent, is of a reddish colour when it flows into these cisterns, leaves them in a state of colourless transparency almost equal to that of pure water. Such a complete decoloration is the best proof of the success of the modern improvements in this branch of manufacture. The cloth bags, and the arrangements by which the liquor is made to flow through them, remove all the opaque impurities; while the charcoal and the apparatus of which it forms a part, remove the colouring matters from the filtered liquor.

In the eastern part of the premises is situated a retort-house, supplied with furnaces, retorts, and various subsidiary arrangements. These, whose use might to a stranger appear rather inexplicable in a sugar-refinery, exemplify one of the most curious and valuable properties in the charcoal employed. When the process of decolouring the sugar has rendered the charcoal impure, water is poured through the mass in the cisterns, until all the soluble part of the saccharine impurities is removed; after which the charcoal is removed from the square cisterns, carried to the retort-house, put into iron retorts—of which there are a large number, each eight or ten feet long, and re-burned. The arrangements for this purpose are on a considerable scale, and very complete; and the process is so conducted that the charcoal leaves the retorts in a state as fit for use as when it was first made; all the impurities having been burned away, without any deterioration in the decolouring qualities of the charcoal. Thus the same portions of charcoal may be used over and over again. This decolouring process was first employed in this country on a large scale by Messrs. Fairrie; who likewise adopted the mode here described of recovering the power of animal charcoal, several years before it became publicly known.

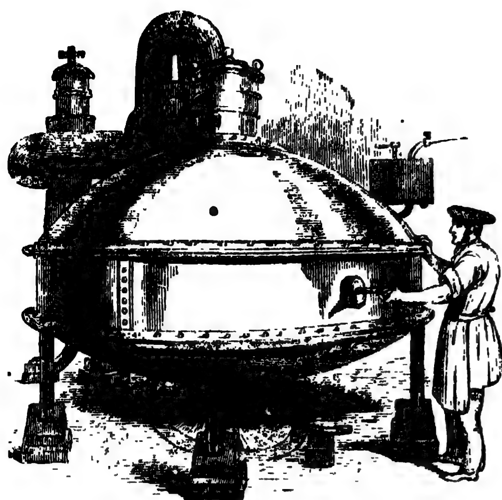
Every one knows that 'loaf' sugar, as well as 'moist,' possesses different degrees of whiteness and clearness of appearance. The mode in which these different qualities arise we shall presently state; but we may here remark, that it is only the finest qualities which present the pure and colourless appearance alluded to above, after passing through the charcoal. The inferior kinds retain a slight tinge of colour.

We next visited that part of the building in which the most important of all the operations is carried on, viz. the boiling. If we were to attempt a description of all the inventions and contrivances which have been brought to bear on this process, it would not only absorb all our remaining space, but would involve scientific details unsuited to our purpose: it must suffice to show how the method usually adopted at the present day differs from the old one, now almost obsolete.

The 'liquor' consists of sugar capable of assuming a crystalline form,—molasses, or uncrystallizable sugar, —and water; and the object of the boiling is to drive off a portion of the water in the form of steam, and to prepare the sugar for crystallizing. Under the old system the saccharine liquor was poured into a large copper vessel called a 'pan,' and there boiled over an open fire, at a temperature gradually rising to 230° or 250°, until the evaporation had caused it to assume a degree of viscidity known by experience to be proper for the purpose. From the pan it was emptied into vessels called 'coolers,' where it was beaten violently with an oar or staff, by the action of which the sugar was so far disentangled from the molasses as to be able to granulate, or become partially crystallized. It was found, however, that, independent of other evils, the sugar was liable in that process to be injured by the high temperature at which it boiled; for there is a tendency to decomposition even at the temperature of boiling-water; and at a still greater heat the tendency is increased. These circumstances led to the happy suggestion, by Mr. Howard, of a method of boiling the sugar in vacuo. In the common operations with which we are familiar, boiling water is always nearly of one temperature, because it is exposed to a tolerably uniform atmospheric pressure; but if this pressure could be removed by the action of the air-pump, or some other means, boiling would take place at a temperature so low that the hand could bear it with impunity. So likewise in the case of sugar-liquor: if the pressure of the atmosphere could be removed, the process of boiling, which is nothing more than a very rapid evaporation, would take place at so low a temperature that the sugar would not be injured by it, viz. from 130° to 150°, that is, one hundred degrees lower than under the atmospheric pressure. Such were Mr. Howard's views; and few scientific suggestions have ever been attended with more complete success. Nearly all the principal sugar-refiners now boil sugar in vacuo, more or less perfect; each one adopting a form of apparatus or a routine of processes best suited to the circumstances under which he conducts his business. We shall presently make a few further remarks on the introduction of this plan; but it will be desirable first to trace the sugar through the boiling process.

The pans which we saw at Messrs. Fairrie's refinery are circular, domed, copper vessels, from six to seven feet in diameter, and nearly the same in height. No fire is visible beneath them; indeed throughout the refinery we saw scarcely a symptom of a fire: whether the purpose be to heat a vessel of water, to boil the sugar in vacuo, to heat a stoving-room, or to warm the buildings generally, the heating power is supplied by steam, which traverses almost every part of the premises in pipes. Each pan is completely covered in, air-tight; but there are many channels of communication with other vessels: one admitting liquid sugar to the pan, another furnishing a channel through which it may flow out; a third admitting steam for boiling the sugar; and a fourth serving as an exit for the air originally contained in the pan, and also for the steam evaporated from the sugar. Various pieces of mechanism are attached to each pan, whereby the temperature of the liquid, the quantity contained in the pan, &c., may be tested; but these need not be further particularized. The external appearance of each pan, and the appendages belonging to it, are seen in the subjoined cut.

The process, then, is briefly this:—the liquid sugar, after percolating through the charcoal, and being collected in a cistern several feet below the pans, is placed in communication with them by an ascending pipe; and the air being withdrawn from within each pan by means of an air-pump, the liquid sugar ascends the



pipe into the vacuum by atmospheric pressure from without, on the same principle as the water ascends in a common pump. Steam is then admitted to a vacant space below the sugar in the pan, and also through pipes traversing the interior; and by these means the sugar is brought to a boiling state while comparatively at a low temperature, on account of the tolerably perfect vacuum existing above the surface of the liquor in the pan. As the evaporation proceeds, the vapour flows through a large iron pipe into an open court, where a cistern of cold water condenses it as fast as it is formed, and thus maintains a vacuum within the boiler. The sugar by this evaporation thickens and becomes partially granulated or crystallized; and to ascertain how far this process has extended, a most ingenious instrument, called a 'proof-rod,' is used, by which a small quantity of sugar may be taken out without disturbing the vacuum in the pan. This 'proof-rod' may be regarded as a key which unlocks a little valve in the body of the pan, draws out a sample of sugar, and locks the valve again. A hollow tube is fixed in the pan, with the outer end exposed to the atmosphere, but the inner end immersed in the liquid sugar. This inner end is constructed with a socket and plug, like the key of an ordinary liquor-cock, with two apertures through which, when open, liquor may flow. The 'proof-rod' is a straight brass rod with a handle, having a key at the farther end, which, on being introduced into the tube and turned round, unlocks the socket and plug in the tube, and allows the liquid sugar to flow through the apertures of the socket and plug into a recess at the bottom of the key. The proof-rod being again turned, locks up the apertures in the tube, and on being withdrawn brings with it a small sample of liquid sugar.

The attendant 'boiler' then tests the state of the sugar, by taking a little between the thumb and finger, and trying what degree of tenacity and granulation it has acquired. If the result is not satisfactory, the boiling is continued for some time longer; but if satisfactory,—and this is a matter that requires constant experience to determine,—a valve at the bottom of the pan is opened, and the sugar flows through a pipe into a room beneath, where vessels are placed for its reception. The sugar, as it flows through, appears to be much altered, for it is now a mass of crystals enveloped in a dark-coloured syrup. All the pans are nearly alike in their mode of arrangement, and the reader will understand that the purpose to which they are applied is to drive off, in the form of vapour, so much of the water which has been mixed with the sugar as to enable the latter to crystallize. The steam employed as the heating agent is brought from a large boiler in the eastern part of the premises, which similarly supplies many other departments of the building.

One of the most marked points of difference between the old and the recent methods of boiling is this:—that under the old system, the temperature at which the concentration was carried on was so high that crystallization could not take place till a subsequent cooling had been effected; whereas under the system introduced by Mr. Howard, the crystallization actually takes place, to a considerable extent, in the boiler itself. It was nearly thirty years ago that Mr. Howard took out his first patent respecting sugar-refining; but, like many other improvements, it made its way slowly into favour among manufacturers. The experiments on which he grounded his plan were made with a small table apparatus; and when, through an arrangement with a refiner in a large way of business, the method was put into practical operation, it was found to produce indifferent sugar, with weak, soft, and small crystals. After many attempts, however, all the practical difficulties were overcome; pure, large, and bright crystals of sugar were produced by the new method; and many refiners, both in London and elsewhere, adopted the patent process, for the use of which they paid a stipulated annual premium. There were some years in which the premiums thus paid by several refiners collectively amounted to more than forty thousand pounds.

We resume our description. After having witnessed the operations and apparatus connected with the boiling, we next followed the progress of the sugar to a room on the lower floor of the building, containing vessels called 'heaters,' into which the sugar flows



from the pans. It is a curious circumstance, that under the old system the corresponding vessels were termed 'coolers,' as being at a much lower temperature than that at which the sugar was boiled in the pans; but they are now called by an opposite name, because the sugar is here raised to a temperature of about 180°, having previously been boiled at 135° or 140°. While being raised to this higher temperature, the sugar is kept constantly stirred; and at a certain point in the process it has acquired a state which renders further heating unnecessary. The object of this process is not so much to crystallize the sugar (for that has already been effected in the pan), as to impart to it a consistence which facilitates the subsequent processes, and gives to the loaf of sugar a firmer texture.

Recalling to mind what has been already stated, it

will be seen that the sugar has been successively deprived of its solid impurities, its colouring-matter, and of some of the water which had been mixed with it; but the molasses, or uncrystallizable parts of the sugar, still remain. To separate these, therefore, is the object of the next few processes, technically termed 'filling-out,' 'washing,' and 'netting.'

The 'fill-house,' the part of the refinery to which our visit next led us, presented a singular appearance. It is a very large square room, on the basement story, paved with stone, and having brick walls and ceiling. A considerable portion of the floor was covered with iron conical moulds, about two feet in height, and six inches in diameter at the largest part; each one placed with its apex downwards, and upheld by those with which it was surrounded. Hundreds, and probably thousands, of these moulds were thus ranged in close rank and file; some filled with sugar from the 'heaters,' others in the act of being filled, and the rest empty, waiting to be filled at a subsequent part of the day's operations. These were the moulds which give the well-known 'sugar-loaf' shape to the masses of white sugar seen at the shops of the grocers. Among the improvements which the business of sugar-refining has undergone, is the substitution of iron moulds for those made of clay; the latter used to be universally employed, but the former possess many advantages, and have almost superseded them.

A busy scene presented itself in the 'fill-house.' A number of men, each stripped from the waist upwards, were engaged in filling the moulds with liquid sugar from the 'heaters,' each man carrying before him a large copper basin shaped somewhat like a coal-scoop, and capable of holding above a hundred-weight of melted sugar. The men went to the 'heaters' filled their scoops with the hot viscid sugar, and walked, or rather ran, with a quick elastic motion, to the moulds, which they filled one after another with the



sugar. Each man, as soon as he had exhausted his cargo by filling three or four moulds, hastened back to the 'heaters,' filled his basin again, and returned to fill other moulds. In witnessing this operation, it appeared strange that the men were not scalded by the liability of the sugar being spilled from the vessels; but practice enables them, by a peculiar spring of the body, to hasten along at a tolerably quick pace, without much personal inconvenience from the heated sugar. As it is important to have all the sugar poured into the moulds while in a certain state of temperature and granulation, a sufficient number of men is employed to 'fill-out' all the contents of one sugar-boiling in about half an hour. When the moulds are filled, and the contents still in a fluid state, the surface is stirred and scraped round the edge of the sugar, to prevent any adhesion to the mould, and also to enable the small crystals which are forming to diffuse themselves equably through the sugar.

These moulds, then, contain sugar and syrup mixed up together, in a heated and viscid state; and in the 'fill-house' they remain till the following day, in order that two effects may be produced, viz., the solidification of the sugar in the act of cooling, and the partial separation of the syrup from it. When these objects are to a certain degree effected, the moulds are taken, one by one, to a place called the 'pull-up hole,' in order to be passed to the upper floors of the building. With the usual brevity of technical language, the term 'pull-up hole' designates the mode of transfer. This hole is a vertical space, fifty or sixty feet high and four or five square, with ledges occurring at distances of every few feet in height, on which boards are placed, to serve as platforms. A door-way opens into this 'pull-up hole' at every story; and the moulds containing the sugar are handed up one by one through the hole, one man taking the moulds from the man next below him, and depositing them in some one of the upper rooms. The moulds differ greatly in size and capacity, the smallest, when filled with liquid sugar, weighing only twenty-five pounds, and the largest, for the inferior kinds of sugar, weighing as much as one hundred and fifty pounds; with the larger kinds, therefore, the weight is too great to allow the moulds to be handed up in this way, and they are hauled up by means of a rope.

While the sugar is thus being conveyed to the upper stories, we will imagine ourselves to have ascended a spiral staircase which traverses the whole height of the building, and to have entered the 'washing' and 'netting' rooms. An extraordinary area of flooring is exhibited by these rooms. We have said that most sugar refineries are lofty, and consist of a great number of stories, and we are now in a condition to see the necessity for this. Every mould full of sugar requires several days for its final completion: and thus each mould is in use so long, that a very large number is required for the purposes of the establishment, and many separate stories are necessary to contain them. In going from room to room, and from floor to floor, we saw repetitions of the same arrangements, viz., moulds ranged nearly all over the floors of the apartments, as thickly as they could stand; there could not have been less than from fifteen to twenty thousand of them filled with sugar, besides those which were waiting to be filled.

We proceed to describe the processes which the sugar undergoes in these upper rooms. A small opening being made in the apex of each mould, the mould is placed in an earthern jar, where it is left for some time. During this period, the syrup flows or drops out slowly, through the perforation, into the jar beneath. When this draining has proceeded to a certain extent, the mould is taken out of the jar, and the syrup, under the name of 'green syrup,' is emptied from each jar into one common funnel or pipe, by which it is conveyed down to the boiling-house. As this syrup still contains a portion of crystallizable sugar, it is boiled over again, with raw sugar, to produce lump sugar of a rather inferior quality, and when all the crystallizable sugar is obtained from it, the residue becomes the well-known substance *treacle*.

This draining, however, does not remove all the syrup from the sugar, a portion being still entangled among and coating the crystals; and to separate this portion, the sugar is 'washed' in rather a peculiar way. Formerly a process of 'claying' was adopted: a stratum of fine white clay diluted with water being laid on the surface of the sugar, the water percolated

through the sugar by its own weight, mixing with the syrup which yet remained in the body of the sugar, and washing it away through the orifice in the apex of the mould. By the modern improvements, this porous surface, or sponge, as it may be considered, is formed of sugar instead of clay. The rough and uneven surface of the sugar on the base of the mould is scraped off into a vessel, and there mixed with water to the state of a magma or mortar, which is again laid on the surface of the sugar. When this magma has acquired a certain degree of dryness, a clear solution of very fine sugar in water is poured on it, and allowed to remain. This solution, finding its way slowly through the mass of sugar beneath, carries with it the greater part of the syrup still remaining, together with a portion of good sugar which unavoidably accompanies it. This richer syrup, technically called 'second runnings,' is emptied from the earthern jars into a funnel which conveys it to the boiling-house, again to be boiled for the separation of the sugar from the molasses. The solution of sugar is renewed from time to time, until the syrup is so thoroughly washed away as to leave the loaf of sugar in a beautifully white state; or if the sugar be of a cheaper quality, until a corresponding degree of purity has been attained. The substitution of sugar for clay as the sponge-like layer placed in the moulds, is one of the many improvements introduced by Mr. Howard; and its importance is shown by the fact, that the process is now effected in one-fourth of the time which it used to occupy under the old system.

A medium kind of sugar, called 'clayed,' or Lisbon sugar, is much used in some foreign countries, and forms a link between moist and loaf sugar. The brown cane-juice, at a certain stage of the process, instead of being put into hogsheads, is placed in conical pots, called by the French 'formes,' with the points downwards, having a hole about half an inch in diameter at the bottom, temporarily closed with a peg. When the sugar in these pots is cool, the apex is opened, and the pots placed over jars. After this a 'claying' process is pursued, nearly similar to that alluded to above. The result of this process is, that after remaining fifteen or twenty days in the moulds, the sugar assumes a form more white and pure than that of raw sugar, but less so than refined. But it would appear probable that this old method will not be much longer pursued.

Returning to the refining processes, it will be evident that the quantity of syrup which drains from the apex of each mould is very considerable. In the first place, there is the 'green syrup,' which flows as soon as the hole in the apex is opened; and afterwards there are the finer syrups, resulting from the solution of fine sugar which is poured on the loaf or lump in the mould, and which carries off a portion of good sugar together with molasses. The subsequent boiling and preparation of those syrups, in order to obtain the crystallizable sugar from them, is almost as important an affair as the refining of the original brown sugar. A curious scale of qualities is maintained in these circumstances. The finest syrup is mixed with other sugar to obtain refined sugar of the same quality as that from which the syrup was obtained; the second quality of syrup assists in the preparation of sugar one degree lower in quality; while the coarsest, or 'green syrup,' produces a kind two degrees lower. Thus the finest syrup from the finest sugar is almost as pure as the sugar itself; while the coarsest syrup from the coarsest sugar is so thoroughly exhausted of crystallizable particles, as to be dismissed from the refining processes, and sold as treacle.

We return to the moulds. The face of the sugar in the moulds becomes rough and uneven, from the subsidence of the solid parts of the solution. When the 'washing' or 'netting' (*i.e.*, making the sugar net, neat, or pure), therefore, is completed, this face is made smooth. A man places the mould on its side across a stool, and scrapes the base or open surface of the sugar with a small instrument; a process which is called 'brushing-off,' an odd term, considering that



no brush is employed. The sugar is then allowed to remain a day or two in the mould, in order that the base may acquire hardness and firmness. A smart blow or two of the edge of the mould against a wooden post loosens the sugar within, and the loaf is turned out upon its base, after having lain in the mould for several days. We are then enabled to see the effect of the cleansing processes which the sugar has undergone; the surface is hard, crystalline, and more or less white according to the quality; the finest quality which we saw having a degree of whiteness almost rivalling that of snow. In no part of the manufacture have the modern improvements produced more decided effects than in the purity of colour now obtained. The inferior kinds of sugar retain a tint more or less dark, probably from the impossibility of expelling all the molasses from them.

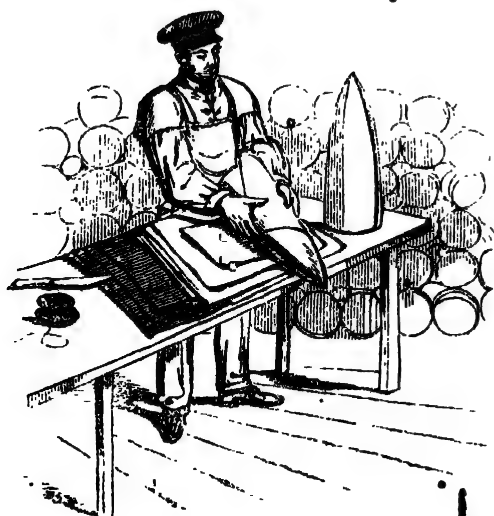
The loaves or lumps (in the language of the refinery, 'loaves' are the finest quality, and 'lumps' somewhat inferior) of sugar are not, however, equally white all over when they leave the moulds, the parts near the apex being slightly damp and discoloured at the surface. To remove this damp portion, an in-



genious machine is employed. Three cutting knives or blades are ranged in a conical form, and made to rotate by the motion of a wheel; and the apex of the loaf of sugar being introduced into the cavity formed between these blades, the surface is shaved or sheared off, leaving the body of the loaf clean and smooth. Some of the larger and coarser lumps of sugar are not treated in this careful manner; but the damp apex is merely chopped off, leaving the lump as a truncated cone. The operation of shearing the surfaces of the loaves is termed 'turning off;' and the waste sugar obtained thereby, as well as that which results from the process of 'brushing off,' is melted and clarified, and converted into the fine clear solution which is poured on the sugar for the process of 'washing.'

After the loaves have been left several hours, ranged over the floors of large rooms, they are taken up one by one, wrapped in paper, and placed in an oven or stoving-room. This oven is one of the most singular parts of the building; the temperature maintained therein—about 140°—is too great to allow a stranger to remain long in it; but we saw sufficient to show the ingenuity of the arrangement. It may be characterized as a room, about ten feet by eight, and sixty feet in height, provided with tiers of shelves at intervals of every two or three feet, and having several doors, one over another, in the side, each door opening into one of the ranges or stories of 'netting' rooms. The lower part of this room or oven—for we may call it either—is occupied by a mass of steam-pipes, so extremely numerous, that the united length of the whole would probably not be less than half a mile; and the heat which the steam communicates to these pipes, radiating from their surface, raises the temperature of the air in the room, and causes a current of heated air to ascend to the top. When a large quantity of sugar is to be put into this oven at one time, the temperature is lowered by opening the doors, so as to enable the men to remain in it; they stand on platforms placed across the space at various heights, and range the loaves on the surrounding shelves.

In these ovens or stoving-rooms, of which there are three, all of great height, in different parts of the refinery, the loaves and lumps of sugar remain until they are thoroughly dried; after which they are taken out and wrapped in blue paper, in which state they may be deemed finished.



An extraordinary quantity of pipes and tubes of various sizes traverse the premises in every direction. Some convey water from the well to the reservoir on the top of the building; others re-convey it to cisterns and pans in different parts; some conduct steam from the large boilers at the east side of the premises to the 'blow-up cisterns,' to the pans, to the 'heaters,' to the ovens or stoving-rooms, and to other parts; while another series convey the sugar and syrup from vessel to vessel, in different stages of their progress.

Thus have we rapidly gone over the routine of processes by which brown sugar is refined, and presented in the state of white crystalline sugar. In considering the advantages which result from any improvements in machinery or manufacturing processes, the first consideration generally is, how far the manufacturer is benefited thereby. But it is by no means unimportant to carry our inquiries beyond this point, and see in what way the improvements influence the retail purchaser. With regard to the refining of sugar, it is found that this refining is as perfectly effected by one series of processes under the modern system, as by a double series formerly; and the effect to the public is shown thus, that whatever be the price of brown sugar (and the fluctuations in this price involve political considerations which we do not wish to discuss in this place), the price of refined sugar is now only about twenty per cent. greater, whereas in former times it amounted to forty per cent. It is supposed that a saving of nearly a million and a half sterling per annum is effected in this country by these circumstances.

We may here perhaps briefly explain the mode of reducing sugar to the state called sugar-candy. The process is not conducted at sugar-refineries, but is nearly as follows:—When the cane-juice has been clarified and boiled, it is placed in old moulds, having their lower ends stopped with linen, and crossed at intervals with strings or small twigs, to retain the sugar as it crystallizes. The moulds are then deposited in a cool place; and in proportion as the syrup cools, crystals are formed. In about nine or ten days the moulds are carried to the stove and placed in pots, and a small aperture made, through which the syrup can drop slowly. When the syrup has drained off, and the crystals of sugar-candy are become dry, the moulds are taken from the stove and broken in pieces to disengage the sugar, which adheres strongly to the sides of the moulds. By previously tinging the syrup with cochineal or some other colouring substance, the candy may be made to assume any desired hue. The arrangement of the utensils used in this process is generally somewhat as follows:—A stove is set apart, the entrance into which is on the ground-floor, as near as possible to the pans: the top is usually from ten to fourteen feet above the ground, and covered like the top or crown of an oven. Beams are fastened into the wall, at a distance of about twenty-six inches from each other, and sufficient to bear a very large weight; upon which strong planks are laid when wanted. The candy-pots are placed upon the planks, and remain there till the process is finished. The pots are usually made of thin copper, without feet, and are perforated round the lower part with numerous holes, the purpose of which is this:—a coarse white thread is drawn by a needle through a hole in one side of the pot, carried across to a similar hole in the other side, brought back again through a third hole; and so backwards and forwards till the lower part of the pot is traversed by several lines of thread; after which the holes are stopped. Each string forms a nucleus round which the candy crystallizes; an effect which used formerly to be produced by the use of small twigs.



[Drummond, from a Portrait by Cornelius Jansen; Hawthornden, from an Original Drawing.]

LOCAL MEMORIES OF GREAT MEN.

DRUMMOND OF HAWTHORNDEN.

SELDOM has poet enjoyed a more poetical home than he who forms the subject of the following paper; and still more seldom have the two been so appropriately and lastingly united. What Drummond borrowed from the exquisite scenery amidst which he was born, he has repaid by adding to it the recollections of himself, and of the tender, graceful, and pathetic verses he therein composed. From that time the two names have been but as one,—we cannot think of either but the phrase Drummond of Hawthornden seems to rise like a household word to the lips.

William Drummond was the son of Sir John Drummond, and was born on the 13th of December, 1585. Among his ancestry there was one name which he doubtless prized highly, Anabella Drummond, the beautiful and accomplished wife of Robert III. of Scotland, and mother to the royal poet James I. He was educated at Edinburgh, where he took the degree of M.A., and on leaving college was sent by his father to Bourges in France, to study the law. So little, however, was that to his taste, that when his father died, in 1610, he entirely relinquished it, and devoted himself to literature and the muses. Nor was the inspiration which love is supposed to give wanting. The object of his attachment was the daughter of a neighbouring gentle-

man (Cunningham of Barnes), a lady possessing tastes and accomplishments peculiarly in harmony with his own. Beautifully has he described his feelings at this period :—

"Ah me, and I am now the man whose muse
In happier times was wont to laugh at love,
And those who suffer'd that blind boy abuse
The noble gifts were given them from above.
What metamorphose strange is this I prove?
Myself now scarce I find myself to be,
And think no fable Circe's tyranny
And all the tales are told of changed Jove.
Virtue hath taught with her philosophy
My mind unto a better course to move.
Reason may chide her fill, and oft reprove
Affection's power, but what is that to me,
Who ever think and never think on aught
But that bright Cherubim which thralls my thought?"

Such a suitor wooed not in vain; the lady returned his affection; the wedding-day was fixed. *On its eve she died.* Our readers may imagine the sufferings Drummond must have experienced. When the first stupefaction of his grief passed off, he fled from Hawthornden and all the places linked with memories of her, and undertook a tour on the Continent, which lasted for some years. The art which he had so assiduously cultivated, and which, by developing the finer capacities of his nature, had enhanced his sense of the calamity which had so bereaved him, now became "its own exceeding great reward" in the solace which it afforded him, even whilst she was the subject. There is an exquisite pathos in the following sonnet, yet one cannot imagine the poet to have been very miserable when it was written: the "bitterness of death" was passed :—

"Sweet soul, which in the April of thy years
For to enrich the heaven made poor this round,
And now with flaming rays of glory crown'd,
Most blest abides above the sphere of spheres;
If heavenly laws, alas! have not thee bound
From looking to this globe, which all upbears,
If ruth and pity there above be found,
O deign to lend a look unto these tears:
Do not disdain, dear ghost, this sacrifice;
And though I raise not pillars to thy praise,
My offerings take, let this for me suffice,
My heart a living pyramid I'll raise:
And whilst kings' tombs with laurels flourish green,
Thine shall with myrtles and these flowers be seen."

The first work which brought Drummond into notice was the elegy he published in 1613, on the death of Prince Henry, eldest son of James I., a youth who had endeared himself greatly to the nation by his early virtues and accomplishments. Drummond sent the poem to Jonson, who emphatically stamped the verses as "all good," particularly the epitaph at its conclusion. Five years later Jonson gave a very remarkable proof of his estimation of the talents and character of the Scottish poet, by setting out on foot to visit him. Of their conversations at Hawthornden, Drummond has preserved some notes, which certainly do not paint the great dramatist in a very favourable point of view. Jonson's biographer, Gifford, consequently has not hesitated to impeach Drummond's veracity in what he says, and his honour for speaking at all. Among the most interesting of these notes are the passages referring to Jonson's own history; one of which, that referring to his having slain a man in a duel, has been very recently confirmed. In Mr. Collier's 'Life of Alleyn' (the actor, and founder of Dulwich College) there is a letter from Henslow, the manager, in which he says, "I have lost one of my company, which hurteth me greatly, that is Gabriel, for he is slain in Hoxton Fields, by the hand of Benjamin Jonson, *bricklayer.*" Now if Jonson followed the occupation here referred to at the time of the duel, as it appears he did, it is a new and interesting feature in his history. Jonson stayed at Hawthornden about three weeks.

In 1643, Drummond was accidentally thrown in the way of Elizabeth Logan, granddaughter to Sir R. Logan of Restelrig, who bore so striking a resemblance to the lady he had loved and mourned, that he paid his addresses to and married her. He was now in his forty-fifth year. About this period he repaired the old building of Hawthornden, and put up an inscription in Latin, to the following effect: "By divine favour, William Drummond of Hawthornden, son of John, Knight, &c., that he might repose in honourable retirement, to himself and his successors restored this house."

When the civil war broke out, Drummond espoused the cause of the king, not in the field nor by the sword, but in the closet and with his pen; conscious, probably, that he could thus render the best service. He was consequently exposed to much hostility and annoyance from the opposite party. It is to this cause, and not to the Presbyterians' dislike of poets, that we should attribute the following circumstance :—"Drummond happening, in the summer of the year 1645, to travel northward, he arrived, in the dusk of the evening, at Forfar, where he intended to pass the night. The inhabitants of Forfar were at that time a race of strict Presbyterians, and held all poets and rhymers of every degree in utter contempt. They had heard of Drummond's approach to the town, and resolved to show no respect, or even to notice him. Upon his arrival there, he found every door shut against him, including the inns and public houses of resort. Bit to the heart with vexation, and pursued by the cries of an antipoetical people, he found it necessary to go onwards to Kirriemuir, 'a bad road, rendered additionally painful by the darkness.' The Kirriemuirians had received the intelligence of the poet's welcome at Forfar, and, as a little broil was carrying on betwixt the rival towns, they determined to show him every respect."* Drummond wrote a stanza on the occasion, not worth transcribing. But this was by no means the worst of the royalist poet's annoyances. He found himself obliged to supply his quota of men to serve against the king. This circumstance, and the deep melancholy which possessed him after the death of Charles I. on the scaffold, shortened his days. On the 4th of December, 1649, he died, where he was born, and where, for the most part of his life, he had lived, in his own beautiful place at Hawthornden. He was interred in the neighbouring church of Lasswade.

For the ensuing description of Hawthornden we are indebted to the remembrances of a gentleman who visited it but a year or two ago, and who at the same time made the beautiful drawing which we have been permitted to copy for the engraving at the head of this paper. The house, he says, is very ancient, with mullioned windows, clustered chimneys, and gable roofs. The interior contains nothing remarkable. The situation is exceedingly romantic, being on the edge of a tremendous cliff of limestone, overhanging the river, which runs here between the cliff on which Hawthornden stands and one equally high on the opposite side, both richly covered with woods. On leaving the house, we were conducted round the precipitous face of the rock, on a mere ledge, to a place where a shallow cavern has been hollowed out of it. Here we found an old table and a seat, and we were told that this was the poet's favourite spot. He composed in it his 'Cypress Grove,' after recovering from a dangerous fit of illness, and the cavern is still known by that name. No place could be better adapted for poetic reveries. In calm and sunny weather, the sigh-

* Life of Drummond, prefixed to Cunningham's edition of his works.

ing of the wind along the chasm, the murmurs of the stream, the music of the birds above, around, and beneath, and the utter absence of any intimations of the busy world, must have often soothed the poet's melancholy, and, we may hope, sometimes brought him back the delightful views which had thrilled his youthful heart. There were other times and seasons when it must have been indeed awful to have sat in that dark and desolate cavern; when the storm, for instance, was rushing through the glen, when the forked lightning was every instant revealing its shaggy depths, and when the thunder seemed to strive to shake the very cliff itself with its reverberations. On leaving the cave we were requested to notice a well, with a hole on one side as though one of the stones had fallen out; this, it was said, lighted a room. Appearing rather incredulous, we were taken round to a narrow aperture in another part of the rock, only large enough to admit one person at a time. Through this we thrust ourselves, when we found we were in a room excavated in the rock, of a square shape, and high enough for a tall man to stand upright. In the walls were many square holes, from twelve to eighteen inches deep, which are supposed to have been used as cupboards. There are four of these rooms, two of which have not even the advantage of such a light as the hole in the well affords. No wonder that there are plenty of traditions connected with these places. The principal is that both Wallace and Bruce found an asylum among them on some of those occasions when their fortunes appeared more than usually desperate. No one should quit Hawthornden without descending to the banks of the river, a long and tortuous way; but the view that there greets us will repay a much more toilsome descent. The rock from which we have descended is on the same side of the river as Hawthornden, but a chasm has separated them, in which the river forms a pool strewed with great fragments of rock. On leaving this pool, the river becomes a shallow but brawling and impetuous stream, gliding rapidly between or bubbling over the masses of fallen rock which there also obstruct the passage. Above the river hangs a lofty ridge of white limestone rocks, with trees, bushes, and plants in every recess; and the purple heath particularly conspicuous. Lastly, immediately in front rises abruptly from the water's edge the bold promontory on which the house stands, bare or nearly so, and contrasting finely with the luxuriant woods that crown its summit even to the very edge, and with the grey venerable building, which, if we may trust tradition, has sheltered some of Scotland's noblest defenders, and which, at least, we know to have been the beloved home of one of the sweetest of her bards.

Drummond gave the first and best example of a Scottish poet departing from the dialect of his country and composing his poems in pure and classic English. The resemblance between his versification and that of Milton in his minor poems, is often and justly referred to; but it is not so often remembered that Drummond was the earlier writer. His 'Elegy on the Death of Prince Henry,' which it has been said no one could read without being reminded of 'Lycidas,' was written when Milton was but five years old: therefore it is the latter who has imitated, or, at least, unconsciously imbibed something of the spirit of the former. It would be difficult perhaps to say anything higher of Drummond's genius than is implied in this circumstance. We have in a former number given his sonnet to Silence, which is equal to most things of the kind in the language. This notice of him may be concluded with the following lines, which appear to show the love that had cost him so many bitter pangs, in a loftier and purer phase than in our previous extracts, and which in all probability, was written not long before his death:—

"Love, which is here a care
That wit and will doth mar;
Uncertain truce, and a most certain war;
A shrill tempestuous wind
Which doth disturb the mind,
And, like wild waves, all our designs commove;—
Among those powers above
Which see their Maker's face,
It a contentment is, a quiet peace,
A pleasure void of grief, a constant rest,
Eternal joy, which nothing can molest."

CHAUCER'S PORTRAIT GALLERY.

THE MERCHANT.

As the increase of towns and the progress of commerce were the immediate causes of that great event which so peculiarly distinguishes the thirteenth century—the rise of the Commons, or people of England, into political power, so that very power of course naturally re-acted upon the influences which had developed it: under its watchful care commerce became less restricted by unnatural laws, charters for self-government were obtained, and powerful associations formed, to which the monarchs of the time could not refuse their sanction, although perhaps not altogether unaware of the bulwarks they were assisting to raise against their own arbitrary encroachments. So rapid, consequently, was the progress of the principal towns of England after the first shock of the Conquest had passed away, that within about three centuries of that period our principal merchants rivalled in wealth and splendour, and in ostentatious but still genuine hospitality, the ancient barons of the country, to whose rank, indeed, their descendants sometimes successfully aspired. What with the wars, and what with the immense band of retainers always attached to the feudal estates, the value of the latter was continually decreasing; hence arose pecuniary difficulties, then mortgages, and sometimes sales of the broad lands, to the thriving and prosperous merchants; who, as their assistance became more and more desiderated, grew more and more powerful and ambitious, and demanded higher rewards for their services. Thus Michael de la Pole, Earl of Suffolk, and lord chancellor to Richard II., was the son of a merchant only, and owed the first and most difficult steps of his advancement to the loans which his father had advanced to the third Edward for the prosecution of the wars in France. And eminently worthy of respect and honour were these princely merchants of the fourteenth century! Among their members were some of the most distinguished men of the time. There was John Philpot, who, in the second year of Richard II.'s reign, when one Mercer, a Scotchman, had fitted out a piratical fleet against the English, hired ships and a thousand soldiers at his own sole cost, and, putting to sea, attacked and took Mercer with all his prizes, and fifteen Spanish ships which he had drawn to his assistance. There was Henry Picard, vintner, or wine-merchant, mayor of London, who entertained four kings at dinner, the year following that in which the battle of Poitiers had been fought. They were—Edward, king of England; John, king of France, his prisoner; David, king of Scots; and the King of Cyprus. "After dinner," says the old chronicler Stow, "the said Henry Picard kept his hall against all comers whatsoever that were willing to play at dice and hazard. In like manner the lady Margaret, his wife, did also keep her chamber to the same intent. The King of Cyprus, playing with Henry Picard in his hall, did win of him fifty marks; but Henry being very skilful in that art, altering his hand, did after win of the same king the same fifty marks and fifty marks more, which, when the same

king began to take in ill part, although he dissembled the same, Henry said unto him, 'My lord and king, be not aggrieved; I covet not your gold, but your play; for I have not bid you hither that I might grieve you, but that, amongst other things, I might try your play;' and (then) gave him his money again, plentifully bestowing of his own amongst the retinue: besides he gave many rich gifts to the king and other nobles and knights which dined with him." There was also Sir William Walworth, who struck down Wat Tyler at the head of his men, an act which, however it may be questioned for its morality, was perhaps as daring an act as was ever committed. Lastly, there was the famous Sir Richard Whittington, who must have expended so vast a fortune in his charities, that we need not wonder the popular mind called in the aid of romance to explain the mode of its accumulation. Besides the erection and endowment of the magnificent almshouses, still existing, he rebuilt, at his own expense, the gaol of Newgate, the library of the Grey Friars, the hospital of Little St. Bartholomew, and a college near St. Paul's, called after his own name. These men were all merchants, and contemporaries of the great poet!

With this introduction, explanatory of the rank and position of the merchants generally of Chaucer's period, we introduce his individual portrait:—

> "A merchant was there with a forkéd beard;
> In mottély, and high on horse he sat;
> And on his head a flaundrish beaver hat.
> His bootés clapsed fair and fetisly.
> His reasons spake he full solemnély;
> Sounding alwáy th' increase of his winning;
> He would the sea were kept for anything
> Betwixen Middleburgh and Oréwell.
> Well could he in exchanges shieldes* sell.
> This worthy man full well his wit beset,
> There wisté no wight that he was in debt;
> So steadfastly did he his governaunce,
> With his bargains, and with his chevisance.†
> Forsooth he was a worthy man withal.

The "mottély" dress is explained by the manuscript so often referred to, where we find the merchant habited in a garment of a bright red colour lined with blue, and figured with white and blue flowers, most probably the dress or livery of the company to which he belonged. In a beautifully illuminated initial letter of the charter granted by Henry VI., in 1444, to the Leather-sellers' Company, is a coloured representation of the king handing the parchment scroll to some of the members, whose dress is of the same colours, red and blue, as that of the merchant in the manuscript. The incorporation of these great civic companies was, as we have incidentally before stated, a striking feature of the fourteenth century. Many of them had long existed previously as guilds and fraternities, but now they were remodelled, and obtained much more extensive powers of administering the affairs of their respective crafts. The goldsmith, for instance, obtained the right of assaying minerals, and the vintners that of gauging wines. A proof of the rapidity with which the commercial character now rose in public estimation is furnished by the fact that whilst in the reign of Edward III. there were but two earls and one bishop among the honorary members of the Merchant Taylors' Company, that number had increased by the following reign to four royal dukes, ten earls, ten barons, and five bishops. This sudden influx of royal and noble personages must be taken, however, we presume, as evidencing simply the consciousness of the extent of the new power on the part of the court, coupled with the desire to direct it to its own purposes, and not at all as evidencing any real sympathy with those pioneers of the future greatness of England. Those purposes were made sufficiently apparent in 1384, when Richard having resumed the city's charter, revoked its provisions, disannulled its liberties, and abrogated its laws, once more put forward his creature Sir Nicholas Brember as lord mayor. A strong opposition, however, was raised; a new candidate, John of Northampton, brought forward in the popular cause; and so much excitement produced, that a riot took place, in which lives were lost. John of Northampton was seized and put in prison, and one of his principal supporters, *Chaucer*, escaped the same fate only by escaping to Zealand for a time, where he is said to have suffered much from distress. But he too, after a time, returning, in hope to live in secret, was discovered, and thrown into the Tower; from which he was not liberated till he had made some disclosures concerning his former partisans. The nature of these disclosures, however, does not seem to have been at all of a dishonourable kind, for no one suffered by them.

Chaucer says of his merchant,

> "He would the sea were kept for anything
> Betwixen Middleburgh and Oréwell;"

which Tyrrwhitt illustrates by the remark, "the old subsidy of tonnage and poundage" was given to the king for the safeguard and custody of the sea, 12 Edw. IV., c. 3; without any further explanation. We may add, then, that our readers have seen a specimen of the dangers to which merchant ships were liable, during this period, in the circumstances connected with the piratical Scotchman, Mercer, and the consequent necessity for the seas being better "kept" from "Middleburgh" and "Oréwell," between which places, doubtless, flowed one of the great streams of commercial intercourse. Middleburgh is still a well-known port of the island of Walcheren in the Netherlands, almost immediately opposite Harwich, beside which are the æstuaries of the rivers Stoure and Orwell. This spot was formerly known as the port of Orwell or Orewell; in effect it was the port of the wealthy and thriving town of Ipswich, situated but a short distance up the last-named river. There are some interesting recollections connected with the Orwell. Near its mouth a most important naval engagement took place between King Alfred and the Danes in 880. Along its waters sailed the Danes on several of their fearful plundering expeditions into the interior of the country: Ipswich was pillaged no less than three times by them between the years 991 and 1000. And, lastly, to come nearer to our own times, and to recollections of a more pleasant nature, along the banks of this river Gainsborough was accustomed to stray, and familiarise himself with those beautiful forms of rustic and landscape scenery, which he afterwards so beautifully reproduced for the enjoyment of his admiring countrymen.

We conclude with a notice of the other principal features of the merchant's portrait, as it exists in the illuminated manuscript. "His bootés clapsed fair and fetisly" are carefully shown, and look, as Shakspere has expressed it, "very smooth, like unto the sign of the leg." His steed is on the gallop, and he wears spurs with enormous rowels, a fashionable trait of the times, we presume. He looks in the prime of life, and his countenance is strikingly expressive of the man of business, who is

> "Sounding alwáy th' increase of his winning."

* French crowns, which were called shields from their having on one side the representation of a shield.

† "The meaning of the passage is,—so steadily did he order his bargains and agreements in borrowing money."—*Clarke.*



THE CID.—No. VII.

"One true and upright vassal better
Than a thousand fawners is;
For a king from many bad men
Cannot make one good, I wiss."

Immediately on the death of King Sancho, which happened A.D. 1073, Doña Uraca sent messengers to her brother Alfonso, then in exile at the Arab court of Toledo, to inform him of his succession to the throne of Castile and Leon. He and his little band of attendants escaped by letting themselves down by night from the city-walls, and having taken the precaution of reversing the shoes on their horses' feet, they eluded pursuit, and reached Zamora in safety. Here the nobles all paid homage to Alfonso as their king, save the Cid, who refused to kiss his hand till he had publicly sworn that he had no part whatever in the assassination of his brother.

"'Don Alfonso! Don Alfonso!
Thou art heir unto this throne;
None thy right would wish to question,
None thy sovereignty disown.
But the people sore suspect thee,
That by thee this crime was done.

Wherefore, if thou be but guiltless,
Straight I pray of thee to swear,
Thou and twelve of these thy liegemen,
Who with thee in exile were,
That in thy late brother's death
Thou hadst neither part nor share,
That none of ye to his murder
Privy or consenting were.'"

The king agreed to take this oath, and the public ceremonial was appointed to take place in the church of Santa Gadea at Burgos—one of those churches, says Father Berganza, which it was the custom in those days in Spain, as in other countries of Europe, to set apart for the swearing of oaths, in order that the ceremony might thus acquire greater awe and solemnity. The Cid himself administered the oath on "the book of the Evangelists," and on a crucifix, or, as say other romances, on a wooden cross-bow and iron bolt which had been blessed by the priest, and which the Cid held to the king's breast as he uttered these words:

"'By this holy roof above us,
I do call on ye to swear,
Don Alfonso, and ye nobles,—
And of perjury beware;

Swear then—if ye to the murder
Of the king consenting were;
May ye die a villain's death,
If ye aught but truth declare!'"

The king hesitated a moment, but one of his favourite knights exclaimed:

"'Take the oath, good king, I pray thee,
Thou no hindrance hast or let;
Pope was never interdicted—
King was never traitor yet.'"

On this the king took the oath, with his twelve nobles. Whether it was, as the Chronicle says, that Alfonso changed colour, or because it was agreeable to the ancient law of Castile, the Cid insisted upon administering the oath three times, which so incensed the king that he exclaimed,—

"'Sore thou pressest me, Rodrigo;
Needless thy demand, I wiss.
Though to-day thou mak'st me swear,
To-morrow thou my hand must kiss.
By my fay, I vow that on thee
I will be aveng'd for this.'

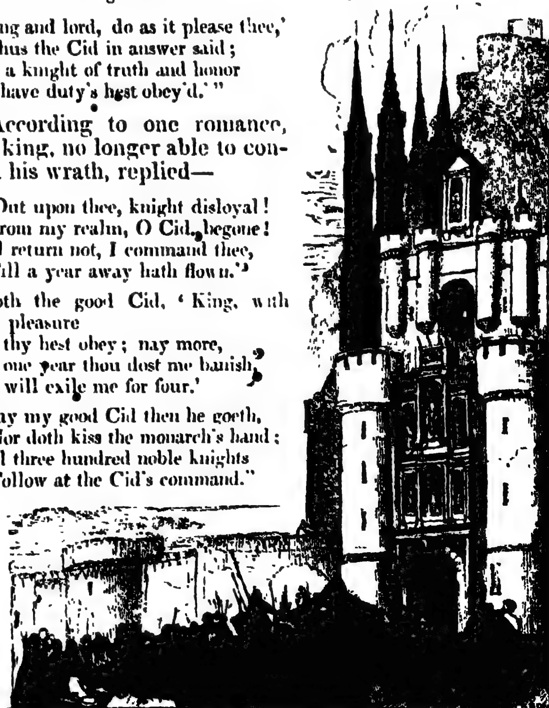
'King and lord, do as it please thee,'
Thus the Cid in answer said;
'As a knight of truth and honor
I have duty's best obey'd.'"

According to one romance, the king, no longer able to control his wrath, replied—

"'Out upon thee, knight disloyal!
From my realm, O Cid, begone!
And return not, I command thee,
Till a year away hath flown.'

Quoth the good Cid, 'King, with pleasure
I thy best obey; nay more,
For one year thou dost me banish,
I will exile me for four.'

Away my good Cid then he goeth,
Nor doth kiss the monarch's hand;
Full three hundred noble knights
Follow at the Cid's command."



Other romances agree with the Chronicle in stating that the Cid's banishment was much subsequent to the day of swearing, though from that time forth the king bore him no good will. In truth, he was not enough of a courtier to gain the young monarch's favour; he was too sternly honest and too plain-spoken to give other than good and wholesome counsel, however unpalatable it might prove.* He was one day with the king in the cloisters of San Pedro de Cardeña, when Alfonso proposed to him to go and attack Cuenca, then held by the Moors. Rodrigo replied,—

"'Thou a young king art, Alfonso—
New thy sceptre in the land;
Stablish well at home thy power,
Ere thou drawest forth the brand.

Grievous ill doth ever happen
To those kings who war espouse,
When their new-gain'd crowns have scarcely
'Gan to warm upon their brows.'"

One of the friars here took up the word for the king, and made answer—

"'Art thou sick to see Ximena?
Dreadest thou the toils of war?
Leave unto the king th' emprise—
Back, Rodrigo, to Bivar!'"

The Cid indignantly exclaimed, "Who called thee, thou cowled one, to a council of war? Take thy cope, good friar, to the choir, and leave me to bear my pennon to the border:

"'Peril, war, fatigue, ne'er daunt me;
Love on me no chains hath tied.
More, God wot, have I Tizona
Than Ximena by my side.'"

Rodrigo's counsels and reproofs were in truth by no means as agreeable to the monarch as the flatteries of the sycophants who surrounded him, and who, jealous of the Cid's great power and fame, did their utmost to foster the king's resentment against him. Even his brilliant success in a campaign into Andalucia failed to conciliate Alfonso, and he lent a willing ear to a complaint made shortly after against the Cid by Ali Maimon, the Arab king of Toledo, who charged him with having laid waste his territories, and taken 7000 captives and much spoil.

Though this foray had been provoked by the depredations of the Arabs, Alfonso chose to make it a cloak for his vengeance, and commanded Rodrigo to begone from Castile in nine days, confiscated all his lands and goods, and even threatened to hang "the Cid, the honor of his realm."

Nobly did the hero reply,—

"'I obey, O king Alfonso,
Guilty though in nought I be,
For it doth behove a vassal
To obey his lord's decree;
Prompter far am I to serve thee
Than thou art to guerdon me.

I do pray our Holy Lady
Her protection to afford,
That thou never may'st in battle
Need the Cid's right arm and sword.

Well I wot at my departure
Without sorrow thou canst smile;
Well I wot that envious spirits
Noble bosoms can beguile:
But time will show, for this can ne'er be hid,
That they are women all, but I the Cid.

These high-soul'd and valiant courtiers,
Who are wont with thee to eat,
Think ye that their lying counsel
For a kingly ear is meet?
Prithee say, where were these gallants,
(Bold enough when far from blows,)
Where were they, when I, unaided,
Rescued thee from thirteen foes?*

Where were then these palace-warriors,
That for thee they drew no brand?
Verily, we all do know them,
Quick of tongue, but slow of hand.
Yea, time will show, for this can ne'er be hid,
That they are women all, but I the Cid.'"

As he passed through the streets of Burgos, Rodrigo was met on every side by lamentations, for "all Castile mourned him as an orphan bewaileth his sire."† The women cried from the windows, "God! what a good vassal were he, if he had but a good lord!" yet none dared to show him favour, nor even to supply him with provisions, for the king had forbidden it, under pain of loss of goods and eyesight. He found even the door of his own abode barred against him. He went on to his Castle of Bivar, and, finding it utterly despoiled by his enemies, he was perplexed about the means for his journey into exile, for he had not even wherewithal to meet the expenses of the way:—

"Then two Jews of well-known substance
To his board inviteth he,
And of them a thousand florins
Asketh with all courtesy.
'Lo!' saith he, 'these two large coffers,
Laden all with plate they be;
Take them for the thousand florins—
Take them for security.
In one year, if I redeem not,
That ye sell them, I agree.'
Trusting to the Cid's great honor,
Twice the sum he sought they lend;
To their hands he gave the coffers—
Full were they of nought but sand!"

The romancist, in astonishment at this, the only base action recorded of the Cid, breaks forth—

"Oh, thou dire necessity!
Oh, how many a noble soul,
To escape thy gnawing fetters,
Hath recourse to deeds as foul!"‡

"The good Cid Campeador, whom God keep in health and safety!" before quitting his native land, made a vigil in the convent of San Pedro de Cardeña; for—

* The romance is in error here, for the reader will remember that it was Don Sancho whom the Cid rescued from fourteen of Alfonso's knights, or rather thirteen, that being the number overcome by the Cid, one having taken to flight. It seems not improbable that this romance was originally written with a reference to the banishment of the Cid by Don Sancho, recorded in No. V. of this series of articles, and that in process of time it came to be applied to his second and much more important banishment by Don Alfonso, undergoing, in its course of oral tradition, such alterations and additions as adapted it to the latter event, while the allusion to the rescue was ignorantly suffered to remain.

† It is with this part of the Cid's history that the Poem begins. We shall in future trust to its guidance in preference to that of the Chronicle, as it is of greater antiquity, and accords better with the romances.

‡ One of these chests is to this day preserved in the cloisters of Burgos cathedral. The Poem of the Cid describes them as covered with red leather, and studded with gilt-headed nails; but this covering, if such ever existed, has been stripped off, and you now see a plain wooden chest, about four feet by two, strongly bound by ribs of iron, and fastened by three antique locks. It is said to contain certain musty documents relative to our hero, but we were not able to verify the report, as it is raised to the height of twenty feet or more from the ground, and supported by brackets against the wall. The wood is very rotten, and, were the chest within the reach of pilferers, it would soon cease to exist.

"The Christian knight it aye behoveth,
Ere he putteth lance in rest,
With the armour of the church
Well to fortify his breast."

When mass had been sung, the abbot and monks blessed his pennon. Then said the Cid, holding the two ends of the pennon in his hands—

"'Holy pennon! blessed pennon!
A Castilian beareth thee
Far away to other lands,
Banish'd by his lord's decree.

Lying tongues of foul-mouth'd traitors—
Heaven's curse upon them light!—
With this ill the king have counsell'd
My good service to requite.

King Alfonso! King Alfonso!
Rouse, bestir thee, rouse and think,
These vain siren-songs which charm thee
Lull thee to destruction's brink.

Sorely, God wot, hast thou wrong'd me,
Yet I wish thee nought but good;
For to suffer wrongs with meekness
Doth betoken noble blood.*

I forgive thee,—yea, to prove it,
I do swear to yield to thee
All my own good sword may henceforth
Conquer from the enemy.'"

Then, with a parting embrace of Ximena and his two daughters, whom he commended to the care of the abbot of San Pedro, he tore himself from them "as the nail is torn from the flesh," and went forth, leaving them "drowned in tears and speechless woe." Turning to the band of knights who determined to follow his fortunes, he said, as they rode away,—

"'Comrades, should it please high Heaven
That we see Castile once more—
Though we now go forth as outcasts,
Sad, dishonor'd, homeless, poor—
We'll return with glory laden
And the spoilings of the Moor.'"

"He was resolved," says the historian Mariana, "to dispel by the splendour of his deeds the clouds of calumny with which his enemies had assailed him."

BRITISH SHEEP.

At what period the sheep was introduced to our island, and under what circumstances, will probably elude all inquiry. We cannot however doubt but that it existed in England previously to the conquest of the Romans, though they do not notice it in their accounts of the productions of this Ultima Thule. But as the Britons of Kent had long traded with the Gauls, who, we know, possessed sheep, and used at an early period a sort of felted cloth, we cannot but conclude that flocks tenanted the hills of our country long before the arrival of Julius Cæsar. But we have proof positive of the antiquity of sheep in the British Islands, though whether domesticated or not we can scarcely determine. Hector Boëthius describes a wild breed in the island of St. Kilda, exceeding the largest goat in size, with heavy massive horns, longer than those of an ox, and as bulky, and with a tail hanging to the ground. Skulls of sheep, apparently belonging to this race, occur in peat-bogs; two of these crania, one most probably that of a male, the other of a female, which were obtained in Ireland from the peat, were some time since exhibited to the Geological Society. Pennant remarks, that such an animal as Boëthius describes is figured on a bas-relief taken out of the wall of Antoninus near Glasgow. These animals, whether a tame breed of them ever existed or not, were certainly not identical with the Mouflon of Corsica (*Ovis musimon*, Linn.), which most naturalists have been inclined to regard as the primitive stock of at least our European races of domestic sheep. This opinion, however, we do not subscribe to. We believe the wild type (if indeed it can be referred to a single type, which is doubtful) to be still undiscovered. We know of no wild species with the long pendent tail so invariable in our domestic races, wherever they exist, excepting indeed in the Persian fat-rumped sheep, and the Kirghise breeds of the same kind which inhabit the plains of Tartary, and which no one who considers them can ascribe to the same origin as that of our European races, whether they be or be not the Corsican Mouflon.

As this subject is very interesting, we shall avail ourselves of an admirable paper by Mr. Blyth, in the 'Proceedings of the Zoological Society of London' for July, 1840, entitled an amended list of the species of the genus Ovis, and which is full of information. Of the genus Ovis he there enumerates the following species, of which some are new to science:—

The Pamîr sheep, or Rass (*Ovis Poli*, Blyth). "In the narrative of the celebrated Venetian traveller Marco Polo, we read that upon the elevated plain of Pamîr, eastward of Bokhara, and 16 000 feet above the sea-level, wild animals are met with in great numbers, particularly sheep of a large size, having horns three, four, and even six palms in length. The shepherds form ladles and vessels from them for holding their victuals. They also construct fences for enclosing their cattle and securing them against the wolves, and which likewise destroy many of the wild sheep. More recently an animal called the *Rasse* was indicated, from report, in Sir A. Burnes's 'Travels in Bokhara,' and its horns have been since transmitted to the Royal Asiatic Society by Lieut. Wood, of Sir A. Burnes's party, through the medium of G. I. Vigne, Esq." This pair of horns was labelled Rass, or Roosh. Sir A. Burnes writes, "I have heard of an animal called Ross by the Kirghises, and Kooshgar by the natives of the low countries; but Lieut. Wood, in the narrative of his recent journey to the source of the Oxus, distinguishes between the Ross and the Kutchgar, the former having straight spiral horns; and its dun-colour being of a reddish-tinge. Both are said to be peculiar to the Pamîr. The same writer, speaking of the Kutchgar, says it was a noble animal, standing as high as a two-year-old colt, with a venerable beard, and two splendid curling horns, which, with the head, were so heavy as to require considerable exertion to lift them. Though poor in condition, the carcass divested of its offal was a load for a baggage pony. The Kutchgar is gregarious, congregating in herds of several hundreds; they are of a dun-colour." This traveller confirms Marco Polo's narrative: "We saw," he writes, "numbers of the horns strewed about in every direction, the spoils of the Kirghise hunter." "The ends of the horns projecting over the snow, often indicated the direction of the road, and wherever they were heaped in large quantities, there our escort recognised the site of a Kirghise encampment." The flesh is much prized by these people, who shoot it (the animal) with arrows. "The Rass is said to delight in the coldest districts—a common sized individual will require two horses to bear its flesh from the field." The horns, following their curvature, are nearly five

* The Cid must mean wrongs from his sovereign alone, for he was not the man meekly to put up with injury from his equals, and we have his own word for it that "those who have noble escutcheons cannot brook wrongs."

feet in length. It would appear that the Kutchgar has yet to be added to the list of species.

The Siberian Argali (*Ovis Ammon*). This noble sheep is described by Pallas.

The Kamtchatkan Argali (*Ovis nivicola*). M. Eschscholtz, who describes this species, states it to be very numerous on the mountains of Kamtchatka; in summer it resides upon the snow-clad heights, but in winter it descends to the lower regions. Kotzebue notices its agility.

America presents us with two species very closely allied to the Siberian Argali—the Rocky-Mountain Argali (*Ovis montana*), and the Californian Argali (*O. Californiana*, Douglas).

The Nahoor, or Snà, of Thibet (*Ovis Nahoor*, Hodgson), a native of the Kâchar region of Nepâl and the glaciers of the Himalaya.

The Burrhel (*Ovis Burrhel*, Blyth), a species allied to the latter, and inhabiting the highest ridges of the Himalayan chain, where it "bounds lightly over the encrusted snows, at an altitude where its human pursuers find it difficult to breathe. It has the bleat of the domestic species, as indeed they all have, and is very shy and difficult of approach. Flocks of ten or twenty have been observed conducted by an old male, which make for the snowy peaks upon alarm, while their leader scrambles up some crag to reconnoitre, and if shot at, bounds off a few paces, and again stops to gaze. They pasture in deep and hollow grassy glens." A specimen, in the Museum of the Zoological Society, was shot near the Boorendo Pass, at an altitude of about 17,000 feet.

The Caucasian Argali (*Ovis cylindricornis*, Blyth), hitherto confounded with the Siberian Argali.

The Armenian Argali (*Ovis Gmelinii*, Blyth). Specimens of this sheep, from Erzeroom, are living in the gardens of the Zoological Society. "According to Gmelin, this species is found only in the highest mountains of Persia. The males, he informs us, are very quarrelsome amongst each other, insomuch that he had been at one place where the ground had been strewed with horns that had been knocked off in their contests." It is allied to the Corsican Mouflon. "Sir John McNeill informed me that 'it appears to be the common species of the mountains of Armenia; occurring likewise on the north-west of Persia;' but the wild sheep of the central parts of Persia is evidently distinct, 'having horns much more resembling those of the domestic ram, being spiral, and completing more than one spiral circle. I think I am not mistaken in supposing,' continues Sir John, 'that I have also had females of this species brought to me by the huntsmen with small horns, resembling those of the ewes of some of our domestic sheep; but, on reflection, I find that I cannot assert this positively, though I retain the general impression.' It is highly probable that a wild type of *O. aries* is here adverted to, which would thus inhabit the same ranges of mountains as the wild common goat (*C. ægagrus*); and with respect to the circumstance of horns in the female sex, I may here remark that this character is very apt to be inconstant throughout the present group."

The Shà (*Ovis Vignei*, Blyth), a Mouflon inhabiting the mountains of Little Thibet and the Sulimani range between India and Khorassan. "Vast numbers of this species are driven down by the snow in winter to the branches of the Indus, where the river breaks through the chain of the Himalaya." The wild sheep of the Hindoo Koosh mountains, described in the 'Journal Asiatic Soc. Beng.' for 1840, is either this or a closely allied species. Its climbing powers are extraordinary.

The Corsican Mouflon (*Ovis musimon*, Linn.), a native of Corsica and Sardinia. Speaking of this sheep, Mr. Blyth remarks—"It has always appeared to me, however, that the specifical distinctness of the Mouflon is very obvious, and I doubt whether it has contributed at all to the origin of any tame race. That it interbreeds freely with the latter, under circumstances of restraint, is well known; but we have no information of hybrids, or *Umbri*, as they are called, being ever raised from wild Mouflons, though the flocks of the latter will occasionally graze in the same pasture with domestic sheep, and all but mingle among them. The male of this animal is denominated in Corsica *Mufro*, and the female *Mufra*, from which Buffon, as is well known, formed the word *Mouflon* and in Sardinia the male is called *Murvoni*, and the female *Murva*, though it is not unusual to hear the peasants style both indiscriminately *Muflon*, which (as Mr. Smyth remarks, in his description of that island) is a palpable corruption of the Greek *Ophion*. It is sometimes stated, but I do not know upon what authority, that a few of these animals are still found upon the mountains of Murcia."

The Cyprian Mouflon, probably different from the preceding, and termed by Mr. Blyth *O. Ophion*.

Leaving out of the question the Ixalos Probaton, Ogilby (of which a unique specimen exists in the museum of the Zoological Society, London, the history of which is obscure), and the Aoudad, or African goat-sheep (*Ovis tragelaphus*), we come to the domestic sheep (*Ovis aries*, Linn.); and here we would ask why the Corsican Mouflon, so limited in its range, is singled out as its wild original. The fact is, that when that idea was first started, naturalists knew little (and much is yet to be learned) of the wild Argalis and Mouflons of the mountain ranges of the Old World; but now that so many species are added to the list, which is still far from complete, it will be more philosophical to wait before coming to a hasty conclusion, until we are assured that no species nearer the domestic race than any yet found exists; and then it will be time to endeavour to search among those known for the types of the domestic races. One thing is clear—that we are not acquainted with the true wild sheep, the roots of our valuable breeds. That the domestic sheep is greatly modified in its external and more trivial characters by the treatment of man, continued through a long series of ages, cannot be disputed; and in nothing is this more apparent than in the fleece or wool with which we see it clad. The Mouflons and Argalis, that is, the wild species of the genus Ovis, are covered with what appears to be a harsh kind of hair, having beneath it a short spiral wool, which in winter becomes longer and fuller. This, however, is denied by Mr. Bell, who, in reference to the clothing of the Corsican Mouflon (which, we know not why, he regards as the origin of all our tame sheep), thus expresses himself:—"It is said by naturalists who have written on the subject, that the pelt of the Mouflon consists of long hair, forming the apparent covering, and of short wool beneath, which is only visible when the former is removed. This, however, is totally erroneous. The longer hairs of the Mouflon are in their structure as genuine wool as that of sheep; they are coarse and stiff, it is true, and nearly straight, but they possess the essential character of wool in the imbricated scaly surface, which gives to wool that remarkable felting property upon which its peculiar utility in many cases depends. It is also somewhat waved, and it requires no considerable change to convert such a filament as this into fine curly wool. On the contrary, the short soft felt which lies at the root of this is nothing more than extremely fine hair, uniform and smooth over its whole surface, and not assuming the slightest appearance of the woolly texture. I have examined these two kinds of hair of the Mouflon from various parts of the animal, and have found no essential variations."



[a, Welsh Sheep; b, South Down Sheep; c, Dorset Sheep; d, Black-faced Cheviot Sheep; e, Norfolk Sheep; f, Ryeland Sheep.]

Mr. Youatt, speaking of an Argali which died at the gardens of the Zoological Society, says, that "being then confined with illness, I requested a very intelligent and observant friend to examine the proportion of wool which grew among the hair. He reported there was not a particle of wool. The author was surprised at this, as the Argali was described as having a winter coat, at least, of fine woolly down, and he sent and requested a small portion of the pelt. The hair was long and coarse enough, but at its base was an exceedingly small quantity of crisped wool. There was so little of it, that it could scarcely be detected on the pelt, but was clearly seen when a lock of hair was cut off close to the skin and held up to the light. This goes far to explain the accounts that have been occasionally given of perfectly hairy (domestic) sheep." Here then we find Mr. Youatt regarding the ordinary clothing of these Argalis and Mouflons as hair, and the fine under-coat as wool, contrary to the opinion of Mr. Bell; and to judge from the analogy presented by wool-bearing animals in general, as the beaver, the otter, the hare, &c., which have an outer garment of smooth hair and an inner one of wool, we incline, notwithstanding the appearances noticed by Mr. Bell, to the general opinion. Be this as it may, excepting on the face, ears, and limbs, which are covered with true hair, the ordinary domestic sheep of Europe are wool-clad; this wool, however, in the more neglected breeds, being more or less mixed with long hairs, the lingering remains, so to speak, of their primitive clothing.

The causes which have rendered the fleece of the European sheep what we now find it, are involved in doubt; judging from what is usual, one would think that shelter and warmth would tend to the removal of such a clothing, and to the substitution of a lighter and cooler material. But such is not the case; witness the Merino sheep of Spain, originally imported from England, and the flocks of Australia and Southern Africa. Supposing the fleece of the primitive sheep to be composed of hair and wool, it seems clear that the shepherds in the early ages of man's history must have selected for breeding those individuals on which, from some cause or other, the wool predominated, the quantity of hair being smaller than usual: and that by others following up this plan, the sheep gradually attained to its present condition, a wool-bearing breed being at length permanently established. This was perhaps sooner effected than we might suppose: we know, indeed, that at a very early period wool was used in the manufacturing of various articles; at first, as may be concluded, by the simple process of felting, afterwards by spinning and weaving. Originally, it cannot be doubted, the sheep, then a wool-bearer and long domesticated, was of a brown or rusty-black colour, a hue still lingering on the faces and limbs of many of our breeds, and sometimes distinguishing individuals amidst a carefully-bred flock, by being their general colour; and thus they exhibit a constitutional tendency to return to their wild origin.

As the primitive fleece of the sheep was a mixture of hair and wool, we cannot be surprised to find races domesticated in which the hair predominates over the wool, and that often so greatly, that they may with propriety be termed hairy. Sometimes this hair is like that of a spaniel dog, long and silky; many of the flocks of the Bucharian Tartars are thus clothed: sometimes, as in varieties of the Guinea sheep, it is coarse and shaggy. Sir Joseph Banks is said to have imported three sheep from Spain, "which were as smooth and sleek as a horse, and which never showed the least sign of wool or down, even in the most minute quantity." Dr. Anderson (in 'American Philos. Trans.,' vol. iv., p. 149) states that on visiting a Danish East Indiaman which put into Leith Roads on her return home, he found on board "a very fine sheep, which was covered with a close coat of thick short hair, very smooth and sleek, like the coat of a well-dressed horse, but the hairs rather stiffer, and thicker set on the skin; the colour a fine nut-brown. It was told me that it was brought from the island of Madagascar, and that all the sheep found in the island were of the same sort." The fat-rumped Persian sheep which we have seen are covered with short coarse wool mixed with hair.

Confining our observations to the sheep of our own island, so important a source of wealth and industry, we may remind the reader that we possess several different breeds, distinguished by different qualities both as it regards form and the characters of the wool: these breeds or varieties are the result of skilful treatment, of pasturage, and of judicious crossings. We may divide them into three groups, the short-woolled, the middle-woolled, and the long-woolled breeds.

The short-woolled breed formerly included many varieties, now, from the improvement of their fleece, to be ranked under the second division, as the South-Down, Norfolk, and Cheviot sheep. It is at present, however, represented by the Anglo-Merino race, to which the sheep of New Holland and Van Diemen's Land also belong. The average length of the wool is about two inches and a half, and its texture is peculiarly fine, soft, and even silky. Short wool is used in the manufacture of delicate and beautiful fabrics; it is, however, generally mixed with wool of a longer staple. The Saxony wool, so valued for its fineness, comes under the present division; it is shorter and finer than the Australian wool, but less silky, the serrations of the fibre being more numerous, and disposing it to felt more closely. Hence Saxony wool is the most valuable in the manufacture of fine broad-cloth.

The average weight of the fleece of the Australian short-woolled sheep is from three pounds to three and a half, sometimes it amounts to five. "There is no wool," says Mr. Hughes, "which spins so well as the Australian;" large importations are annually sent to the British market, at an average of 2*s.* 6*d.* per pound. In 1833 the quantity imported from New South Wales and Van Diemen's Land amounted to 3,516,869 pounds.

It has been the object of the British sheep-farmer to convert the short-woolled breeds into a race with wool which, while its length is increased, preserves its original fineness and delicacy. Thus we have now, in place of the old short-woolled breeds, a middle-woolled race, of great value, and of which the fleece is in the highest request. The cut at the head of the present article gives as examples of this middle-woolled race, the Welsh mountain-sheep, the black-faced of Scotland, the Norfolk and the Dorset breeds, with the South-Down and Ryland.

EXHIBITIONS OF MECHANISM AND MANUFACTURED PRODUCTS.

THE POLYTECHNIC INSTITUTION.

We recently offered a few remarks on the nature and objects of the Museum belonging to the Society of Arts. On the present occasion our attention will be directed to the mechanical and manufacturing departments of the Polytechnic Institution.

This Institution, which holds its meetings in Regent Street, is a joint-stock undertaking, established a few years ago, for the purpose of "educating the eye" in matters of science and art, and of "affording to the inquirer the means of obtaining a general knowledge of the processes by which the wonders of art and manufacture are produced." These objects are carried out by various means, among which are lectures on chemical and scientific subjects, the exhibition of models of machinery, and specimens to illustrate the progress of manufactures. It is to the two latter of these features that our remarks will principally apply. The exhibition of machinery and models is not a gratuitous one; but a visitor may, in the course of an hour's visit, "educate the eye" to an extent fully adequate to the charge made.

On entering the building from Regent Street, we find ourselves in the "Hall of Manufactures," a room about forty feet square, occupied in rather a miscellaneous manner. At the right-hand side are lathes and turning-engines of various kinds, the action of which is explained to any inquiring visitor by the attendants. Near these are two specimens of looms; one, the old Dutch machine, and the other a modern power-loom worked by steam. At these looms a weaver is generally at work; and as the action of the machines can be minutely inspected, the nature of the weaving process can be learned much more quickly by an inspection of them than by reading any description. Ingenious working models of braiding and twisting machines, set in action occasionally during the day, show the manner in which many small haberdashery wares are manufactured. In our Supplement on the glass-manufacture, we had occasion to allude to the tenacity and ductility of glass in a melted state: these qualities may be witnessed by watching the operations of a glass-blower in the hall; the articles which he manufactures are, it is true, mere toys; but the processes are nearly the same in principle.

There are other objects in this hall, but none that call for notice here except a steam-engine. This engine, situated at the north-west corner of the hall, is, though small, of elegant construction; but the point for which we mention it is to show how well it illustrates the communication of mechanical power from one part of a building to another. In most of our great manufactories, machinery, placed in different and often widely separated apartments, is set in motion by one engine; and the mode in which this motion is transferred from place to place is beautifully shown in the instance before us. A fly-wheel attached to the engine acts as a reservoir of mechanical power, which, by means of endless bands passing over wheels, of shafts, and of toothed-wheels, is communicated to a very large number of models in the Great Hall, an apartment several yards from the steam-engine.

Into this great hall, a room about a hundred and twenty feet long, we next pass; and, abstracting our attention from the mere elegancies or ornamental articles deposited there, we shall notice the objects belonging more particularly to the manufacturing arts. There is one feature which we look upon as of considerable importance, viz. series of specimens illustrative of the different stages through which an article passes in the progress of manufacture: a feature which might, we think, be advantageously carried out to a much greater extent. These specimens are not placed so prominently before the view of the visitor as they ought to be; and it is probable that many persons pass by them without knowing their nature or object. One series illustrates the porcelain manufacture: specimens of the clays and earths in their crude form; afterwards in their mixed form; a plate made from them; the same plate printed in blue colours, but not glazed; the materials of which vitrifiable glaze are formed: a plate after it has been glazed; porcelain before and after it has been glazed. Specimens illustrative of the hat-manufacture: wool and fur in their simple states; the same combined into a triangular 'batt;' the batt felted into a conical cap; the cap in a state of transition to the form of a hat; and finally, a hat in its blocked shape. Another series illustrates the manufacture of fine cutlery: the crude iron; the modified appearances which it afterwards presents; the manufactured steel: the shapes into which it is cut; and the finished razor produced therefrom. The 'glass' illustrations are incomplete, for they consist only of manufactured articles, beautiful, it is true, but not illustrating the stages of manufacture: there ought to be specimens of the sand, the alkali, and the oxide of lead, in their simple states; then in their mixed state; then fused into a mass; and lastly, in the state just previous to working. One glass-case contains specimens of woven and twisted fabrics of brass, iron, and copper wire; and another, of similar articles made from the fibres of the cocoa-nut; both of which are interesting, as showing how extensively a *thread* of any substance, whether vegetable or mineral, may be worked up into a useful form. Another series illustrates the production of useful articles from caoutchouc, or India-rubber: the gum is here shown in all its various states, from the time it is formed on the tree, through its various stages—sometimes a solution, and at others a thread—until it assumes one of a numerous variety of forms. We repeat our opinion that this department might be made one of the most valuable in the exhibition, by extending the series, and by labelling every specimen in a conspicuous and readable manner.

Models of steam-engines are placed near the entrance to this hall, most of them being, to a partial extent, set in action by power brought from the acting steam-engine in the entrance-hall. Near here, also, is one of Mr. Hall's hydraulic belts, machines intended to drain marshes and fens, by drawing up water through the suction or absorptive agency of a belt or web: the model here exhibited draws up water to the height of twenty or thirty feet, by the vertical motion of an endless belt, dipping into water below. Numerous specimens of agricultural implements, garden-engines, fire-escapes, carriages, mangles, and other machines lie around in various places. Occasionally we meet with an odd juxtaposition of objects,—a model of the Venetian Bucentaure, with a steam-engine boiler on one side, and a box of preserved mutton, brought by Captain Ross from the wreck of the Fury, on the other; but these are discrepancies which may be overlooked.

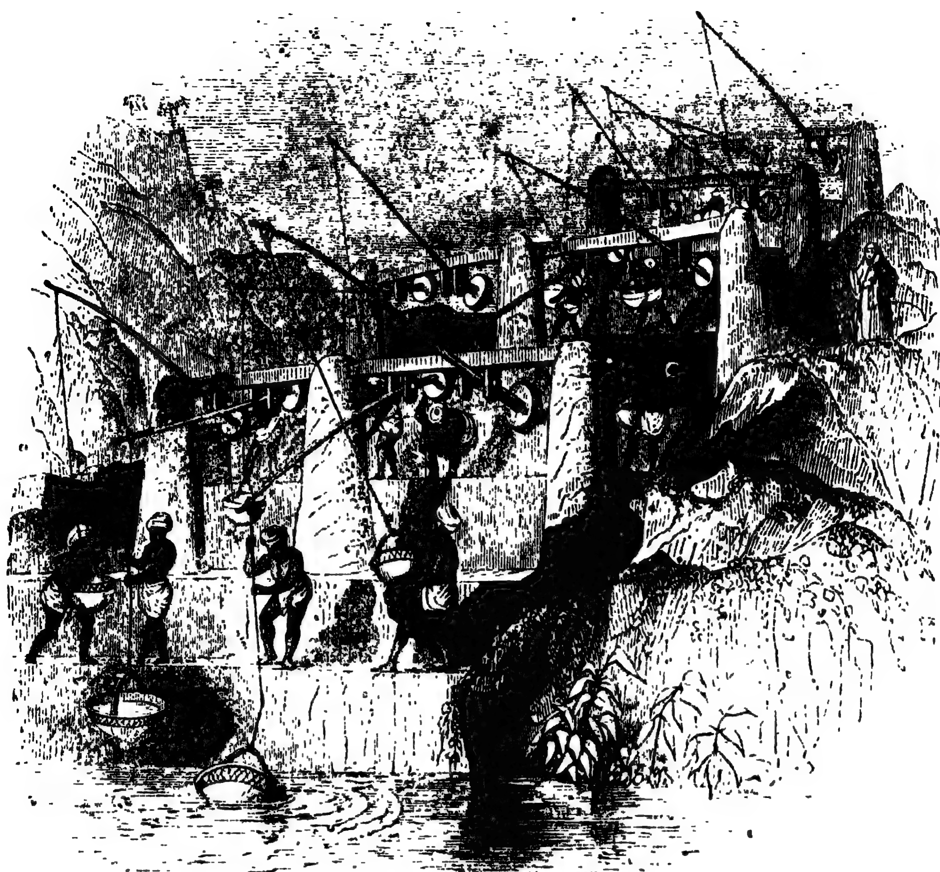
The diving-bell is one of the "lions" of the place, and is certainly an excellent way of illustrating the law of pneumatics relating to the pressure of air. A little philosophy will suffice to show the visitor the action of this machine:—As the bell descends into the water, the air within it becomes pressed into a smaller space, but still it continues to occupy a certain portion of room which the water cannot reach; and the living inmate, though exposed to air of great density, is untouched by the water. An air-pump is employed to force a constant supply of fresh air into the bell, to replace that which is contaminated by respiration.

The reservoir of water into which the bell descends is also the scene of operation of a man who, clothed in a water-tight dress, remains below the surface of the water several minutes, and manages a piece of apparatus intended to illustrate the raising of sunken ships by electrical agency. But, confining ourselves more particularly to pieces of mechanism, we may allude to a small coining-press, showing the method of coining at the Mint. The press, however, is too far from the eye to make its mode of action clear to persons unacquainted with it. On different parts of two canals running on either side of this coining-press are various models of ships, boats, paddle-wheels, propellers, locks, dams, and other specimens of hydraulic engineering. Building-docks, dry-docks, launching-slips, piers, &c. are also among the objects represented by models.

In one part of the building is a machine which is principally interesting as showing how easily people are sometimes deceived, when they are ignorant of the principles of physical science. Time was when all the world went to *see* the "Invisible Girl;" but there she lies—or rather the wooden representative of her—almost unnoticed. The "Invisible Girl" is an acoustical deception, which once brought a harvest to its proprietor; but it is now placed in this exhibition with the very proper view of explaining away the apparent magic, and pointing out the manner—by no means deficient in ingenuity—in which it acted.

There is one glass-case in the Gallery which is somewhat important. It contains specimens of all the strata bored through in sinking a well near London to a great depth. The specimens are ranged in the order in which they occurred, and form a useful index to the nature of the subsoil on which London is built. Numerous other specimens, derived from various quarters, and illustrative of various geological features, are distributed in glass-cases round the room.

A pneumatic telegraph, an anemometer, a rain-gauge; an orrery, intended to show, as far as such mechanism can do, the relative sizes of the planetary bodies; and various other machines, more or less belonging to the mechanical sciences, are to be found in considerable number; but to them we have not space particularly to allude, nor to such small matters as the "self-acting candle-extinguisher," &c. Our object has been to speak of those departments of the exhibition which illustrate the progress of arts and manufactures in an instructive and interesting form.



[Modern Shadoofs.]

IRRIGATION IN THE EAST.

ARTIFICIAL irrigation, as a means of promoting the fertility of the soil, is comparatively but little attended to in our agricultural system. The moistness of the climate and the frequent showers dropping fatness upon the land, will sufficiently account for this neglect, though it is probable that these natural advantages are not for the future likely to preclude that attention to the subject of artificial irrigation which it deserves.* The rich water-meadows on the banks of some of our rivers afford proofs of the utility and profit which result from irrigation, if conducted according to the rules dictated by experience or science. The meadows on the Wiltshire Avon, for instance, which are so remarkable for their productiveness, are on a bed of shingle and pebbles matted together by the roots of the grass, and if they were not fertilised by the water of the river being judiciously made to flow over them, they would be as barren as Bagshot Heath. The agriculturalist who has paid attention to chemistry and botanical physiology knows that water is the most essential element of vegetation, and that neither the seed can germinate nor the plant receive nourishment without moisture. In warm climates, when the periodical rains occur, even the desert becomes blooming and covered with verdure; but soon after they have ceased, the constant evaporation soon drys up the moisture, and it again assumes its arid and lifeless appearance. The warmer the climate, and the more rapid the evaporation, the more luxuriant is the vegetation, provided there be an abundant supply of water.* Our agriculturalists who emigrate to New South Wales and Australia would find it advantageous to study the agriculture of those regions which have an analogous climate to that of New South Wales, as they will then learn something of those processes which the experience of ages has proved to be suitable to the circumstance of their new country, and thus be able to counteract its great defects,—aridity, and the deficiency of rivers and streams. "It seems (says the writer of the article 'Irrigation,' in the 'Cyclopædia') that where there is great heat in the air, water alone will supply the necessary food for the growth of plants. It is probable that the component parts of the atmosphere are more easily separated, and made to enter into new combinations with those of water, in a high temperature, than in a lower; or that the leaves and green parts of vegetables imbibe water in a state of solution in air, and that in this state it is more easily decomposed. Atmospheric air and water contain all the principal elements of vegetables, namely, oxygen, hydrogen,

* In vol. i., p. 359, of the 'Journal of the Agricultural Society of England,' there is an account of the Duke of Portland's Water-meadows at Clipstone Park, by J. Evelyn Denison, Esq. The land occupied by these meadows was at one time partly a rabbit-warren, over which a few sheep wandered, and a swamp haunted by wild ducks and snipes; but, chiefly by means of irrigation, the produce is now very great, "exceeding all anticipation."

* 'Penny Cyclopædia,' art. 'Irrigation.'

carbon, and nitrogen: the remainder are either found in the soil or diffused through the water. Manures seem to act principally as stimulants or re-agents, and are themselves composed of the same elements." To these principles, therefore, are to be referred the importance of irrigation in all dry and hot countries, where no expense is spared to obtain a supply of water, and ingenuity is taxed to the utmost to distribute it over as large an area as possible, for beyond the limits of irrigation the soil is comparatively unproductive.

Egypt, Syria, and Western Asia, where rain is discontinued throughout the summer, and where, in consequence of that and of the extreme heat, all the smaller streams are dried up, will furnish us with the most antient practices of irrigation, and they are those which still prevail in those countries.

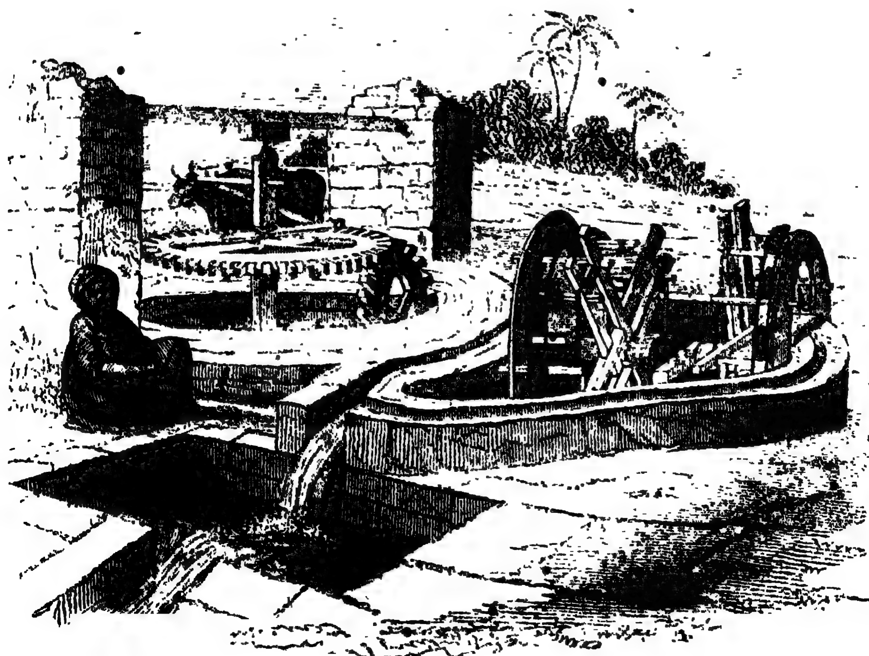
When the water was near at hand, as in a reservoir upon the grounds, the plan was sufficiently simple, and the sculptures of antient Egypt contain figures of men with a yoke upon their shoulders bearing water-pots. When the river is high, or the banks low, two men are employed to raise the water by their united action, in a single vessel (called *ckutweh*). They stand opposite each other on the different banks, and holding a vessel by ropes, they let it descend into the water, and on its being filled raise it to the surface, and pour the contents into a trench which conducts it to the gardens or other grounds where it is required.

It is, however, in such cases, more usual to raise the bucket by means of the *Shadoof*, which is the most common and simple of the machines used in the East for raising water, whether from rivers or from wells. It is thus described by Mr. Lane:—"It consists of two posts or pillars of wood, or of mud and canes or rushes, about five feet in height, and less than three feet apart, with a horizontal piece extending from top to top, to which is suspended a slender lever, formed of a branch of a tree, having at one end a weight chiefly composed of mud, and at the other, suspended from two long palm-sticks, a vessel in the form of a bowl, made of basket-work, or of a hoop and piece of woollen stuff or leather: with this vessel the water is thrown up to the height of about eight feet, into a trough hollowed out for its reception.* This mode of raising water is sculptured on the monuments of antient Egypt.

When the river is too low, or its banks too high for shadoofs on the same level to raise the water to the surface of the soil, a series of four or five shadoofs is rendered necessary. The water is then raised from the river by shadoofs, and discharged into a trench, from which it is taken by other shadoofs, and discharged into another trench above, and so on from trench to trench, as represented in the cut, until it is raised to the level of the fields.

Another machine, much used for the same purpose as the shadoof, not only on the banks of the Nile, but on those of the Euphrates, Tigris, and all the principal rivers of Western Asia, is the *Sackiyeh*, and which is usually in all cases called 'the Persian Wheel,' in which country it is very largely employed for the irrigation of gardens and other cultivated grounds. The example exhibited in the cut is one of the most perfect of the kind, being used for the irrigation of the gardens of one of the old beys, on the banks of the canal by which Cairo is traversed. The following is Mr. Lane's description of this machine:—The Sackiyeh "mainly consists of a vertical wheel, which raises the water in earthen-pots attached to cords, and forming a continuous series; a second vertical wheel fixed to the same axis with cogs; and a large horizontal cogged wheel, which, being turned by a pair of cows or bullocks, or by a single beast, puts in motion the two former wheels and the pots. The construction of the machine is usually of a very rude kind; and its motion produces a disagreeable croaking noise."† The revolution of the wheels takes down the string of buckets on one side, and brings them up full on the other. On reaching the top, they are reverted by the continued action of the wheel, and pour forth their contents into a trough which conducts it to a reservoir, whence it is distributed in rills over the garden. It is by the wheel and string of buckets that water is usually raised from

* 'Modern Egyptians,' vol. ii., p. 24.
† Ibid., ii., p. 25.



[The Sackiyeh, or Persian Wheel.]

wells in Syria, although the shadoof is sometimes employed. A contrivance similar to the shadoof is occasionally used for wells in some parts of Great Britain, and may be frequently seen in the north and east of Europe, and in the United States of America and in Canada.

There is another machine used for the irrigation of lands, when it is only necessary to raise the water a few feet. This is called the *Taboot*, and Mr. Lane describes it as somewhat resembling the sackiyeh, "the chief difference being that, instead of the wheel with pots, it has a large wheel with hollow jaunts, or fellies, in which the water is raised."

Grounds requiring to be artificially watered are divided into small squares by ridges of earth or by furrows: and the water, flowing from the machine or cistern into a narrow gutter, is admitted into one square or furrow after another by the gardener, who is always ready, as occasion requires, to stop and direct the torrent, by turning the earth against it with his foot, and opening at the same time with his mattock a new trench to receive it. This mode of distributing water over a land rarely refreshed with rain is more than once alluded to in the Scriptures; and indeed a distinction is founded upon it between Egypt and the Land of Canaan (*Deut.*, xi. 10, 11).

THE ROAD AND TRAVELLING IN THE OLDEN TIME.

FROM Southampton, on the southern coast of England, the traveller may now proceed by railway as far northward as Lancaster or Darlington, the railway lines from Rugby being continued to the latter place, and those from Birmingham to the former one. Thus, in the space of a summer's day we may traverse over parts of England which once constituted the independent Saxon kingdoms of Wessex, Essex, Mercia, and Northumbria, but which, partly by reason of improved means of communication, have become so united in interest and national feeling as to be comparable only to the individualization of a single mind. While such rapid changes in the facilities of intercourse are going on, it may be interesting as well as useful to glance backward to the locomotive facilities of former times.

For several years previous to the opening of the great lines of railway our system of travelling had reached perfection. Neither skill, nor capital, nor enterprise could render it more admirable. The excellence of the roads, the quality and training of the horses, and the division of labour carried to its greatest efficacy, could alone enable the public of Edinburgh or Glasgow to calculate the arrival of the mails to a few minutes after a journey of four hundred miles performed in forty-two hours, including stoppages, which were necessarily limited to the shortest possible space of time. The 'long stages' and the mails, which, to the number of sixty or seventy, daily travelled along the great highways, and imparted so much animation to the small country town, no longer rattle along its streets or dash through the villages, and greater must be the contrast on account of the suddenness with which they have now vanished. Even the small village road-side inn grew into importance, and while 'changing horses,' passengers entered it for a moment to partake of the comforts for which it had a more than local reputation. Perhaps the palmiest time for inns was in the days of "merry England," when the roads were so thoroughly bad as to be impracticable or nearly so for wheel-carriages, and journeys were performed on horseback. Judges of assize, the learned members of the bar, and their clerks rode the circuit. Churchmen, from right reverend prelates to sleek and well-fed abbots with the humbler lay-brothers of their order proceeded in picturesque array, attended by their sumptuary animals with their "chappell and wardrobe stuff." Of the abbot, in Chaucer, it is said—

> "Full many a daintie horse had he in stable;
> And when he rode, men might his bridle hear,
> Gingeling in a whistling wind as clear,
> And eke as loud, as doth the chapell bell."

Gentle dames and fair damsels took the road on their palfreys. Chaucer's 'Wife of Bath' is spoken of as

> "Girt with a pair of sporres sharpe,
> Upon an ambler easily she sat."

Then there was the court making progresses from one royal manor or castle to another, or meeting parliaments at York, Leicester, Lincoln, and other ancient towns; also the nobles removing to and from their different castles, or travelling up to London to court with their trains of attendants; and the single horseman riding a distance of a hundred miles or more to London or elsewhere with a letter, before posts were established, would join these parties, whose numbers would be swelled by dealers and others going to the different fairs to buy and sell, and by companies of pilgrims riding to some favourite shrine. The roads were not therefore so dull in those days.

The arrival of a numerous company at the 'hostelrie' where they were to spend the night would occasion preparations very different from those which were required when the mailcoach-passengers of later times alighted and were allowed twenty minutes or half an hour for supper, after which they were again hurried on to their destination. The inns of the olden time must have been extensive establishments, combining within themselves the means of comfort and abundance if not of luxury. Harrison, who wrote in the time of Queen Elizabeth, says—"Our inns are very well furnished with naperie, bedding, and tapisterie, especiallie with naperie." Of the host of these days Sir Walter Scott has given us a description in the opening chapter of 'Kenilworth:'—'The guests," he says, "were in some sort not merely the inmates but the messmates and temporary companions of mine host, who was usually a personage of privileged freedom, comely presence, and good humour." The guests themselves were men of weight, rank, and influence; and the host rose into a position of increased dignity by entertaining them. He would derive some importance too from his acquaintance with the news of the country obtained from the travellers who lodged with him, or refreshed themselves at his house during their journey; and with the opportunities which his situation afforded for studying life and character, we may easily believe that not a little shrewdness and humour would be mingled with the joviality of his calling. After riding all day, the guests also would be disposed to give the rein to cheerfulness and merriment under circumstances so well calculated to excite hospitable feelings and sympathy in individuals even of the least genial nature. Although we have quoted Harrison's encomium, yet there is a passage in one of the letters of the Earl of Shrewsbury, written in 1582, which shows that in his journey from Winfield Manor-house, near Alfreton, to London, he was accompanied by carriages which contained "bedding" for himself and "pallets for some of his folks;" but this may be explained by the largeness of his retinue. "I thynke," says he, addressing his agent, "my company will be xx gentylmen and xx yemen, besides their men and my horse-keepers. I thynke to set forwards, about the 11th of September, from Wynfield to Lester to my bedde, and so make but four days' journey

to London." The railroad will now convey a traveller from London to within half a mile of the ruined manor-house at Winfield in about seven hours. Sixty years before, namely in 1526, Henry Clifford, Earl of Cumberland, rode from Skipton to London, with thirty-three servants, at an expense of 7*l.* 15*s.* 1*d.* The earls of Northumberland, in the same age (1512), when they removed from Alnwick to Wressle, or any of their other castles, appear to have been accompanied by thirty-six horsemen, and no less than seventeen vehicles or long waggons filled with household things. They carried with them to their different places of residence bedding, hangings, and furniture, leaving the walls of the one which they had just left bare, as the arras was equally required to conceal the nakedness of that to which they were proceeding. One of the vehicles is termed, in the 'Northumberland Household Book,' a 'chariot,' but it was simply a large waggon drawn by six or seven large 'trotting horses,' the chariotmen riding on a nag by the side.

Above a century later (1640), we find the wife of Henry, the last Earl of Cumberland, journeying from London to Landesborough, with thirty-two horsemen in her train, the cavalcade being eleven days on the road; but prices had altered, and the costs of the journey amounted to 68*l.* 18*s.* In the privy-purse expenses of the Le Stranges, an ancient family settled at Hunstanton in Norfolk, where they had a manor, and which is about 113 miles from London, there are various entries which show the cost of travelling. On August 15th, 1520, four of their servants rode on horseback into Staffordshire. On the first day the cost of their dinners at Lynn was 7*d.*, and for "horsemete there" 5*d.* They arrived at Wisbeach to supper, for which they paid 1*s.* 1*d.*, and for breakfast next morning 4*d.*, the cost of their horses being 1*s.* 4*d.* For one man, the "costs in ryding to London" and back to Hunstanton were 6*s.* 2*d.* He paid 2*d.* for his dinner each day, and 2*d.* for his supper, and performed the journey in three days. The baiting of his horse for the night was 10*d.*, at Newmarket (a large sum), 6*d.* at Ware, in going, and 8*d.* on his return. For "horsemete" in London on Sunday night, Monday, and until Tuesday at noon, he paid 1*s.*, and his own expenses were 11*d.* At Brandon Ferry he paid one penny for "dryncke:" ale was 1*d.* a quart. The accounts of another journey "to Londonward, the Fryday after Seynt Peter," commence with the following entry:—"Imp. at Castleacre for dryneke, 1*d.*" The two following entries show that it was no uncommon thing to send a man from Hunstanton to London with a letter. Thus Lady Le Strange makes an entry of 9*s.* 3*d.* "for cost of riding up to London with a letter to my son Nycholas:" and there is an entry by a servant of 7*s.* 6*d.* for costs of riding to the same place "with your letter for Mr. Southell;" Richard Le Strange's expenses for "riding to the Prior of Lewes" were 26*s.* 8*d.*; a servant is paid 7*s.* as his "costs ryding to the abbot of Welbeck, Nottynghamsyre;" and another 5*s.* "when he rode into Warwyckshire for grehounds." In a journey made to London by one of the Le Stranges, in 1520, the accounts kept by one of the attendants contain the following items, under the head of "Rewards to Londonward:"—"Item, to a mynstrell at Newmarket, 4*d.*; to a harmyte between Barkwaye and Ware, 1*d.*; to a freer at Ware, 2*d.* These "hermits" occupied cells, and haunted the public roads, and the "freers" had begging licences, but they seem to have been in no great repute at this time, judging from the sums they obtained. In the household expenses of another family, under the dates of 1572 and 1574, we find, in the expenses of a journey to London, the sum of 4*d.* paid "amongst the poor folk by the way;" and 1*s.* "to the blind harper at Ware." Ware seems to have been a very musical place in those times, as, in a similar journey, in 1574, the sum of 3*s.* was paid "to the musicians at Ware."

From thirty to fifty miles seems to have been the usual rate of a day's journey on horseback during the 16th century. In one instance the journey from London to Hunstanton (113 miles) is performed in two days. The travellers dined at Newmarket, and lodged at Barkway, and on the second day dined at Ware, and supped in London. When the state of the roads is considered, this rate of travelling was very rapid. Two centuries later, namely, in 1739, the great North Road north of Grantham is described as consisting of a narrow paved causeway for horses, with an unmade road on each side of it. The paved part of the road was traversed by strings of pack-horses thirty or forty in number, the foremost carrying a bell, to give warning to travellers, who were compelled to leave the causeway to allow them to pass.

Our ancestors must have been men of greater powers of bodily endurance than the present generation, to have been capable of undergoing, as they were accustomed to do, a journey on horseback along such roads from Glasgow or Edinburgh to London. In the thirteenth century, when the roads were doubtless in a still worse condition than they were five centuries afterwards, the number of miles travelled in a day's journey was also much greater than would have been thought possible. From 'A Table of the Movements of the Court of John, King of England, from his Coronation on the 27th of May, 1199, to the end of his reign in 1216,' prepared with great industry, by Mr. Hardy, of the Record Office in the Tower, it appears "that the court very constantly travelled between thirty-five and forty miles a day, and on particular occasions a distance of fifty miles was traversed." In one year King John changed his residence one hundred and fifty times, visiting religious houses and his castles and manors, in some cases consuming in kind the rents due to the crown, and in others impoverishing the country by the rapacity of his purveyors. Suitors were necessarily compelled to follow the progress of the court. In 1566, the messenger dispatched from Edinburgh with the intelligence of the birth of a young prince (afterwards James I.) reached London on the fourth day.

Thoresby, the Yorkshire antiquary, has given, in his 'Diary,' a minute account of a "London journey," on which he set out on horseback, in company with his friend Alderman Miller of Leeds, on the 27th of December, 1708. On the first day they reached Barnby Moor, a distance of forty-one miles, and he piously ejaculates, "Blessed be God, we found the ways much better than expectation."

On the 28th the travellers "found some of the ways very bad," especially near Tuxford, "where the ice breaking in, it was both troublesome and dangerous." They escaped what Thoresby terms "several imminent dangers," which he enumerates, first, "in passing the Trent, which we were forced to ferry over, as also over several meadows, and ride over others for above a mile together, very deep to the saddle-skirts frequently, and dangerous, especially upon a long causeway, which the guide was forced to plumb every step, because, if we had slipped off upon either side, we had been plunged in a considerable depth of waters." They lodged this evening at Grantham (thirty-eight miles), where he had a Scotch physician, also travelling to London, as his "chamber-fellow."

On the 29th they again set forward, but snow having fallen in the night, they only reached Stamford, a distance of twenty-two miles. In this part of the road Thoresby notices with gratitude the number of 'horsing stones, each of three steps,' placed by the road-side for the convenience of travellers by a benevolent in-

dividual whose name he records. On the 30th and 31st of December, and 1st and 2nd January, the travellers were weather-bound at Stamford.

On the 3rd of January, "having the encouragement of some of the Scotch gentry, who must of necessity be at the parliament at the time appointed, we ventured upon our journey, being fourteen in company," and though their guide refused to proceed on account of the state the roads were in, yet they reached Huntingdon in safety, a distance of twenty-seven miles.

On the 4th the travellers proceeded through Royston to Puckeridge, "where we lodged comfortably." On the 5th Thoresby and his friend "overtook the Scotch posters and got before them to London, though at Enfield had the misfortune to be plunged almost belly deep, by the breaking in of the ice, that the water run in at my pockets and stained my papers." Thoresby spent the evening with a friend in the Temple after this journey of ten days (now performed in as many hours), and which, not reckoning the four days at Stamford, occupied six days constant travelling.

On Monday, February 14, Thoresby and the Aldermen began their journey from London to Leeds, "in company with some Hull gentlemen." They "baited at Ware and reached Royston in good time," being thirty-seven miles. Next day they began their journey "by six in a cold morning," and reached Stamford in good time, having accomplished forty-eight miles. On the 16th they "rose very early." The roads in some places were "rougher than a ploughed field," and "the ice breaking, we were often forced to dismount." They reached Leeds on Friday, having been five days on the road.

The practice of taking long journeys on horseback continued until the roads had become so much improved that the public conveyances were enabled to outstrip the horseman, and then economy of time as well as money decided the public in their favour. There appear to have been some public conveyances established in the sixteenth century. Stow speaks of them as "long wagons," afterwards called "caravans," and says that they usually carried twenty or twenty-five passengers. The gentry and persons of consideration frequently travelled by them, taking with them their servants, plate, &c. Sir William Dugdale notices in his 'Diary,' in 1660, that his "daughter went towards London by waggon." On the 2nd of May, 1659, he himself "set forwards toward London by Coventre *coach*," probably a lighter vehicle than the 'waggon.' The slowness of travelling is noticed by several writers of this period. Anthony à Wood had never visited London until he was thirty-five years old, but in 1666 he set out from Oxford by coach, and was two days travelling to town. A coach was afterwards established by which the journey between these two places was performed in thirteen hours in the summer season, but according to a notice dated 1692, the time occupied in winter still continued to be two days.

Thoresby's 'Diary' contains an account of several of his 'London journeys' by coach. On August 26th, 1712, he left London for Leeds by coach, and passed over Enfield Chace, "which yet abounds with deer," then by Barnet and Hatfield to Welwyn, "a town of good inns," and Stevenage, where they spent the night. The next day they reached Northampton, but it was so dark when they arrived, that after narrowly escaping being overturned, the passengers alighted and walked into the town. The modern stage-coach journeying all night at the same rapid pace as during the day, lighted by [illegible] brilliant patent lamps, one each at the hinder [illegible] front 'boot,' and one on each side of the driving-bo[illegible] would have astonished our worthy antiquary. [illegible] th[illegible]8th they only proceeded as far as Leicester; [illegible] 29th, to make amends for this slow travelling, they started early and "reached Nottingham in so great time that we hoped to have got to Mansfield, but the coach wanting some repair detained us." From Leicester to Mansfield would have been a journey of forty miles. On the 30th they lodged at Doncaster, and on the 31st Thoresby arrived at York, where he had business. The number of miles travelled on each of the six days was as follows:—1st day, thirty-two miles; second, forty; third, thirty-two; fourth, twenty-six; fifth, thirty-two; and sixth, thirty-seven miles. Before the Edinburgh mail was taken "off the road" the journey from London to York was performed in less than twenty-three hours.

In 1714 Thoresby again visited London, and intending to start from Leeds on Monday by coach, he received on Sunday a message from Wakefield that "the coach could not reach this town" (Leeds). At this period, and even still later, the coaches started only when they had obtained a part of their complement of passengers, and their departure was of course very irregular. Thoresby set out on horseback to meet the coach at Wakefield, on May 3. The passengers dined at Grantham, where Thoresby remarks they "had the annual solemnity (this being the first time the coach passed the road in May) of the coachman and horses being dressed with ribbons and flowers, the town music and young people in couples before us." This 'solemnity' is still observed in many parts of the country, though with bated splendour, and even the omnibuses of London display May-day tokens. On the third day of their journey they were joined by other passengers, "which, though females, were more chargeable in wine and brandy than the former part of the journey, wherein we had neither, but the next day (he ungallantly says) we gave them leave to treat themselves." The practise here alluded to would add rather inconveniently to the costs of the journey. They reached London in four days after leaving Wakefield. In March, 1723, at which time the roads probably were not so good, he made the same journey in five days, and on his return in June in four days. There were now many public vehicles for passengers on the North Road, and on reaching Barnby-Moor on his present journey, there "were so many coaches that some were ill put to it for lodging."

The time occupied in stoppages may be estimated by several of Thoresby's notices. In one case he attended prayers in the parish church at Grantham, and heard the sermon, resuming his journey after he and the rest of the passengers had dined. At another time he left the coach "to seek for fossil shells and formed stones;" and in a journey to York from Leeds, while the horses were probably baiting at Tadcaster (for relays were not frequent), he "visited old Mrs. Morley to inquire for autographs." While in London in 1714, he went to Cambridge by coach, and the journey only occupied one day, but great exertion both of passengers and horses was required for this rapid rate of travelling. Thoresby says:—"After a weary night, rose by *three*, and walked to Bishopgate Street to take coach." Such was the exertion made to get to Cambridge by the evening, that he complains he "had not time" to visit some objects of curiosity on the road.

Influence of Tables-d'Hote on the Continent.—To the prevalence of tables-d'hôte in every town and village of the Continent, must no doubt be ascribed much of that social feeling and easy carriage which characterize the people of almost every country in Europe except our own. Being frequented by persons of all ranks, they lead to an assimilation of manners and of taste, which must be conducive to general refinement; and by an interchange of opinions and a diffusion of intelligence during the two or three hours of daily intercourse, they must contribute to a diffusion of information and a better understanding between all classes.—*Mr. Emerson Tennent's Belgium.*



CHAUCER'S PORTRAIT GALLERY.

THE SERGEANT-AT-LAW.

A very characteristic feature of old times in England is shown to us in the 'Canterbury Tales,' where the members of so many different classes of society, being brought together by a common object, mingle freely together: the rich and the proud undeterred by any of that feverish desire to stand aloof from their fellow-men; and the poor and humble, by any of that chilling sense of dependence which too often mark the relations of those classes in our own day. What motive of an equally powerful nature to that which induced our ancestors to go on pilgrimages to so many different shrines (could such a motive be found) would now suffice to bring the sergeant-at-law and "justice full often at assize" into intimate companionship with the ploughman, the miller, the host? Yet there is no reason to doubt Chaucer's fidelity: he only painted what in all probability he had frequently seen; whilst at the same time it must be observed that sergeants-at-law were then personages of still greater importance than now. They acted, it appears, as judges: and they were chosen only from among the most opulent as well as most learned members of the profession. It would have been highly unreasonable indeed to have done otherwise, considering the great expenses that attended their investiture with the sergeant's robes and coif. They were bound to give a "great dinner like to the feast of a king's coronation," which was to "continue and last for the space of seven days;" and it was expressly provided, says our authority,* "that none of those elected should defray the charges growing to him about the costs of the solemnity with less expenses than the sum of 400 marks:" an immense sum in those days. The chief items, next to the dinner, were the gold rings, one of which was given to every important personage present at the ceremony of creation, from the prince down to the "officers and other notable men in the king's courts;" and the countless suits or liveries of cloth that were expected from the newly made sergeant-at-law by the members of his household, by his friends, and by acquaintances. As several sergeants were generally created at the same time, it was found most convenient for them to join in giving one common feast, which accordingly became a most magnificent affair, and was generally held in one of the chief palaces of London. The eleven sergeants made by Henry VIII., in 1531, kept their feast at Ely-house, Holborn, when the king himself, with his consort Katherine, honoured them, on the principal of the five days the feast then lasted, with his presence. They sat, Stow has remarked, in "two chambers," that is to say, apart from each other (they were divorced within the next eighteen months): and the foreign ambassadors occupied a third. "In the hall, at the high table, sat Sir Nicholas Lambard mayor of London, the judges, the barons of the exchequer, with certain aldermen of the city. At the board on the south side sate the master of the rolls, the master of the chancery, and worship-

* Dugdale's 'Origine Judiciales.'

ful citizens. On the north side of the hall, certain aldermen began the board, and then followed merchants of the city. In the cloister, chapel, and gallery, knights, esquires, and gentlemen were placed. In the halls, the crafts of London. *The sergeants-at-law and their wives kept in their own chambers.* It were tedious to set down the preparation of fish, flesh, and other victuals spent in this feast, and would seem almost incredible." He ends by confirming Dugdale's remark, "it wanted little of a feast at a coronation." We must add to this account from Stow, that minstrels and trumpeters were stationed without the hall the whole time, playing at every course. With such extraordinary expenses to meet, on their initiation into the new office, we need not be surprised to find that it was sometimes necessary to summon persons by writ to take it, even although at the same time there was no "man of law throughout the universal world, which by reason of his office gained so much as one of these sergeants."*

Such were the rank and importance of this member of the law, at the time the poet introduced him into the Canterbury pilgrimage.

"A Sergeant of the law, wary and wise,
That often had ybeen at the *Parvise*,
There was also, full rich of excellence.
Discreet he was and of great reverence;
He seemed such, his wordes were so wise:
Justice he was full often in assize,
By patent and by pleine† commission.
For his science, and for his high renown,
Of fees and robés had he many one.
So great a purchaser was no where none;
All was fee-simple to him in effect,
His purchasing might not be in suspect;
Nowhere so busy a man as he there was,
And yet he seemed busier than he was.
In termés had he case and domés all,
That from the time of king Will weren fall.‡
Thereto he could endite, and make a thing
That couldé no wight pinch at his writing;
And every statute could be plain by rote.
He rode but homely in a medley coat,
Girt with a seint§ of silk, with barres small.

Warton, speaking of the word Parvis, says that it is supposed to be derived from Paradise, which derivation Richardson adopts in his Dictionary. Many of our old religious houses had a place called the Paradise; hence, perhaps, the name came to be applied to the porticos of churches.

We find in Chaucer's translation from the 'Roman de la Rose' the following passage:—

"There was no wight in all Paris
Before Our Lady|| at Parvis,
That they ne might the booké buy:"

and Warton says that in the year 1300 children were taught to read and sing in the Parvis of St. Martin's church at Norwich. The same word was also used in connection with the schools of "Sophistry" formerly existing in Oxford, which consisted of academic exercises, principally in logic, held in the afternoon. The Parvis to which Chaucer's Sergeant-at-Law "often had ybeen," stood in the same relation to the law that the Oxford schools did to logic. "Here not only young lawyers repaired to learn, but old sergeants to teach and show their cunning."¶ Some suppose the Parvis of the Metropolis to have been in Old Palace Yard, before Westminster Hall; others, with more probability, on account of its vicinity to the Inns of Court, name St. Paul's. There can be little doubt but that the latter was the place, as Dugdale speaks of the "Pervyse of Paules."

Our Sergeant, it appears, had received many "fees and robés;" another custom, as regards the robes, peculiar to ancient England, when all the officers of the superior courts of law received from the king's wardrobe such clothing both for summer and winter. Of the dress of the Sergeant in the fourteenth century, the visions of Piers Plowman give us some idea. We read there,—

"Shall no Sergeant for his service wear no silk hood
Nor pelure on his cloak for pleading at the bar."

In the Sutherland manuscript he wears a scarlet habit, with open sleeves, faced with blue, and ornamented with small bars or stripes. His white furred hood is upon his shoulders, and he wears the characteristic distinction of the Sergeant, the coif upon his head. This "medley" dress continued to be worn even in Dugdale's time. The robes were then of three colours, murrey (or dark red), black furred with white, and scarlet. We may observe, in conclusion, that among the exquisite touches of satirical description with which the Canterbury Tales abound, there are none happier than that which paints one of the little affectations of the eminent lawyer:

"No where so busy a man as he there was,
And yet he seemed busier than he was."

* Dugdale. † Pleine—full.
‡ That is to say, he was thoroughly acquainted with all the cases, and dooms, or decisions, which had been given from the time of the Conqueror.
§ Cinct, or girdle. || Notre Dâme.
¶ Waterhouse's Commentary on Fortescue.

AMERICAN GROUSE.

[From a Correspondent.]

The two varieties of grouse most generally known of any belonging to the continent of North America are the pinnated grouse (*Tetrao cupido*) and the ruffed grouse (*T. umbellus*). The former is by no means so common as the latter, and this comparative scarcity no doubt tends to enhance its merits and the value attached to it. The pinnated grouse, or heath-hen, as it is frequently called, in size, shape, and habits bears a strong resemblance to our red grouse; but the plumage is not at all alike, for the former is of a peculiar gray or dark ash-colour, without the dusky-red of the latter. Perhaps the heath-hen may be a little the larger of the two, but the difference, if any, is undoubtedly very trifling. The flavour of its flesh much resembles that of our own grouse, but the colour of it is scarcely so dark. These birds are found for the most part in those wild and elevated situations where, either from the sterility of the soil or the very considerable altitude, no forest-trees are found, the only vegetation being two or three sorts of heath and a little alpine moss; and hence the American name of barrens seems very significantly applied to localities of such extreme desolation. The subsistence of these birds is therefore exclusively confined to the young shoots of alpine plants or the berries they produce; for during the rigours of a North American winter they are never known to migrate to more sheltered and milder regions, or indeed to any situations which do not yield their favourite food.

They are chiefly found among the Green Mountains of Vermont, the White Mountains of New Hampshire, and occasionally among some of the other mountain-ranges of the Eastern states, as well as in the adjacent British colonies. But they are not confined to the Eastern states, for in many of the various spurs of the Alleghany Mountains, throughout the entire distance from the Hudson, or North River, to the southern boundary of Virginia, comprehending portions of the states of New York, New Jersey, Pennsylvania, Ohio, and Virginia—wherever these lofty barren wastes present themselves, the pinnated grouse is found in greater or

smaller numbers. They are said also to inhabit the regions in the vicinity of the Rocky Mountains. As they are only to be shot on the wing, which is but little practised by American *hunters*, as they are called, they are somewhat rare in the markets, and will occasionally fetch six shillings a brace.

The ruffed grouse, or drumming partridge, as this bird is commonly called in the Eastern states, or the Pennsylvania pheasant, as it is usually named in the Middle states, is nearly of the same size as the pinnated grouse, but altogether of a different character as regards its habits and general appearance. Unlike the former, these birds are bred in and continue to frequent the forests, even after large extents of the timber are cleared away by the woodman's axe, though they occasionally wander a short distance into the adjoining pastures or corn-fields, but more particularly in quest of wild summer fruit and berries than in search of grain or other farm produce. When flushed, whether in an open clearing or in the woods, they invariably perch upon the limbs of some forest-tree; for notwithstanding I have sometimes known them to ramble to the distance of half a mile or more from the nearest part of the forest (though only in the summer season), whenever they happened to be put to flight they were sure not to alight until they had reached the fastnesses of their favourite woods.

They for the most part keep in coveys of eight or ten until the young ones are full-grown; and afterwards, though occasionally found single, they are more commonly met with in pairs. When alighting on the limb of a tree, for the most part at a considerable elevation, this bird exhibits more sagacity than most other birds, or, indeed, than any of the other varieties of the grouse family. It selects a pretty stout limb for its perch, and places itself in an almost upright position, so that the hunter often finds it difficult to discover the exact spot; for although it may place its head in a position to look down with one eye upon its enemy, the head of the bird being small, the sportsman can seldom discover it at so great an elevation. The barking of a dog, trained to the business, will often put it off its guard; for its whole attention being bestowed upon the quadruped, the hunter takes advantage of the first exposure of its body to his sight.

This bird evidently takes the name *ruffed* from the tufts of feathers on each side of the lower part of the neck, which, when excited in any way, it erects at pleasure. They are, however, peculiar to the male, since the female has no ruff to set off her charms; neither is her general plumage nearly so beautiful as that of the male. The feathers covering the body are not dissimilar to those of our hen pheasant; but the back and neck feathers of the male bird, though not so deeply tinted as those that clothe our male pheasant, are beautifully shaded with hues of green, orange, and purple; and hence, in all probability, it has acquired the name of Pennsylvania pheasant. The tail, which is fan-like, adds greatly to the elegant appearance of this bird, for it is composed of feathers beautifully barred with rich brown and black; and, like the turkey, it has the power of moving its tail when so erected to the right or to the left to suit its convenience or some capricious feeling: the ruff and the tail are usually erected at the same time. During the summer and autumn these birds feed upon the wild berries which they find in the woods or in the vicinity of their outskirts; but they also crop the young buds and shoots, though they rarely meddle with any species of grain or pulse or other productions that the farmer's garden may produce. In extremely severe winters I have known them, in both New Jersey and Pennsylvania, driven to crop the green leaves and berries of the narrow-leaved laurel; and although but few of them appear to have died, yet their flesh has been rendered so unwholesome, that all persons who have partaken of it under such circumstances have felt themselves severely affected.

American ornithologists have not omitted, when referring to the ruffed grouse, to notice the peculiar drumming noise that it makes by striking its wings against the sides of some fallen tree upon which it takes its stand, which it practises during both spring and autumn, but particularly during the former season. This drumming is indeed a very curious characteristic of those birds, being altogether unlike the sound produced by any other tribe of the feathered race. In most cases a good-sized tree, but one that has been stretched upon the ground for many years, and which has become partially hollow and decayed, is selected to *drum* upon; and if the rough bark has decayed and fallen off, so much the better. The bird, having selected a tree of this sort, will mount and walk along it from end to end; and then returning, it will select a favourable place, take its stand, spread out its wings, and commence striking the tree with the hardest part of them, repeating the blows with a measured, but an increasing degree of quickness, until the blows become so quick that it is impossible for the ear to count them. A few of the first strokes are nearly a second apart; towards the conclusion, ten or twelve times that number are given in the same space of time, the entire operation not occupying more than eight or ten seconds. This drumming is not repeated immediately; sometimes the bird will wait half a minute, sometimes a whole one, and occasionally several minutes, before it recommences the same motion with its wings; and in this way it will often amuse, at least employ itself, for several hours in the day. When the fallen log or tree upon which one of these birds takes its stand is peculiarly favourable for eliciting a loud noise, this drumming, on a calm day, in the perfect stillness of the forest, may be heard at the distance of nearly a mile; and when heard at a considerable distance, it somewhat resembles the dying rumbling sound of a distant peal of thunder, and far from unfrequently I have known it mistaken for such. The drumming I have here described very commonly brings upon the drummer its own destruction: for the hunter, being attracted to the spot by the well-known noise, has little difficulty in approaching within gun-shot distance, and shooting down his unwary victim. To an unpractised ear, however, it is difficult to fix the spot from whence the drumming proceeds, and the sportsman sometimes comes upon his game before he is aware, and scares it away.

The flesh of these birds is white, delicate, and well-flavoured, and is much esteemed where they are scarce. But the rural population of America do not seem to set much store by scarcely any species of game their country supplies them with: and in proof of this observation I will remark that in many of the new settlements where the pinnated grouse are pretty abundant, I have, during the winter season, many a time known the hunters bring these birds to me for sale or for barter, and a sixteenth part of a dollar (very little more than three-pence) was the price per head in money, and in the way of barter a pound of pork would command the largest and plumpest of them. As regards the estimation in which venison is held in the same country I have frequently known it sold at a penny a pound by the quarter, or three halfpence for the saddle, or six pounds of venison bartered for one pound of salt pork.

We ought, in humanity, no more to despise a man for the misfortunes of the mind than for those of the body, when they are such as he cannot help; were this thoroughly considered, we should no more laugh at a man for having his brains cracked than for having his head broke.—*Pope.*



[Bromley Church.]

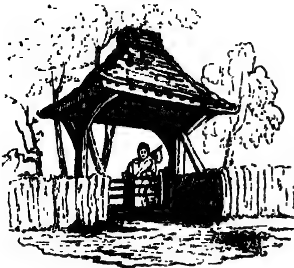
RAILWAY RAMBLES.

THE RAVENSBOURNE RIVER.

[Concluded from page 158.]

Between Hayes and Bromley, at a place called Hayes' Ford, the high road crosses the Ravensbourne, which here increases somewhat in size, and advances with a little more rapidity: the tiniest of streams has changed into one of the smallest of rivers. Leaving it, a little on our left, to wind round the base of Bromley hill, we take a shorter path through the fields towards a delightful green lane which runs over the brow of an eminence opposite that on which Bromley is situated, and so reach that very clean, agreeable-looking town. Its name is derived from *Brom-leag*, a field or heath where *broom* grows; an etymology confirmed by the present aspect of the neighbourhood Bromley dates its history from no less remote a time than that when the county had its own monarchs; one of whom, Ethelbert, in the eighth century, gave Bromley to the bishops of Rochester, who appear to have ever since made it their residence. One of them, Bishop Ford, was murdered here in 1261. The existing palace is a plain unassuming edifice of brick. In its gardens we find a well, formerly much resorted to for its admirable medicinal qualities, and from the fact that there was an oratory attached to it, with indulgences for all who came hither to worship. The oratory long ago sank into ruin, and the well itself was forgotten and lost sight of, till the year 1754, when it was repaired and a picturesque-looking covering or roof on wooden pillars placed over it to shelter those who came to drink of its healing waters. It is now again much decayed. Bromley is also distinguished for a very magnificent charitable institution. As we pass along the town towards the London extremity, we see on the right a very stately manorial-looking building of brick, with wings projecting forward a little from each end, and a handsome doorway and flight of steps in the centre; the whole surrounded by beautiful and extensive grounds. This is Bromley College, founded by Dr. Warner, bishop of Rochester, who died in 1666, for the widows of clergymen (to the number of twenty) of the established church who might be left in distressed circumstances. Subsequent benefactions have doubled the number. The inmates receive 30*l.* 10*s.* each per annum. Five additional houses have also just been built by Mrs. Sheppard for the daughters of such ladies as, dying in the college, have left their children destitute. The church of Bromley is an interesting structure, and would amply repay us for a closer inspection than we can now make. It has a lofty square tower with a turret at one of the corners, which seen from a distance makes one anticipate the finding of the keep of some old fortress still frowning defiance over the broad valley extending below, rather than a house of God stilling the very neighbourhood around by its air of "exceeding peace." Hither Dr. Johnson brought the remains of his beloved wife, and placed over her the Latin inscription that now meets our gaze. In his despair at the misery he saw impending, he had but three days before finally discontinued his 'Rambler.' Dr. Hawkesworth, the author of the 'Adventurer,' and of 'Almoran and Hamet,' and the translator of 'Telemachus,' also lies here. There are some interesting monuments to different bishops of Rochester. But an inscription on a stone "erected by voluntary contribution" on the outside of the church, more strongly arrested our attention than anything else in or about the edifice. It is to the memory of Elizabeth Monk, the wife of a blacksmith, who was herself childless; but it appears that "an infant to whom and to whose father and mother she had been nurse (such is the uncertainty of temporal prospects) became dependent upon strangers for the necessaries of life: to him she afforded the protection of a mother. Her parental charity was returned with filial affection, and she was supported in the feebleness of age by him whom she had cherished in the helplessness of infancy." The inscription is from the pen of Dr. Hawkesworth. The entrance into the churchyard lies beneath one of those curious canopies antiently called Lich-gates, from the Saxon *lich*, a corpse. Although the name appears to be here lost, we were gratified to find that the purpose of the porch is still remembered. An old man sitting on one of the graves said that they used to bring all the corpses through it, and set them down awhile under its cover. This gate, however, has been restored or rebuilt

at no very distant period; and having heard that an older one existed at the neighbouring village of Beckenham, we walked over to see it. Our readers have here a representation of the Lich-gate at Beckenham.



Returning towards the southern extremity of Bromley, we find a lane which leads us directly down to the Ravensbourne; and here, on the left, are the remains of an old moated manor-house called Simpson's Place. The site belonged to John de Banquel in 1302; from his descendants it passed into the possession of a family named Clark. William Clark, in the reign of Henry V., obtained a licence from that monarch to erect "a strong little pile of lime and stone," with an embattled wall and deep encircling moat. It was purchased in the following reign by John Simpson, who much improved the mansion, and gave his name to it. The moat (with water) yet remains on two sides; a part of the buttress at the south-east corner is also standing. Between the interstices of the ancient walls trees have struck root in various parts, and grown to a considerable size, so that the ruin has a very picturesque appearance. Leaving Simpson's Place and following the course of the river, we soon reach the spot here shown.



[Water-gate, Bromley.]

Beyond Bromley the Ravensbourne proceeds through some broad meadows towards a thick plantation; where its banks are fringed by alders and willows, through which one can with but difficulty make way, and where the occasional *whirr* of the partridge as it starts suddenly from the ground beside us, or of the pheasant mounting heavily upwards, speaks of the solitude that generally reigns over the place. As the river enters the park of Holwood-Hill Place, it widens and becomes very interesting. Here there is a waterfall, not of the Ravensbourne, but of the ornamental waters of the park into it, filling the air with its delightful sound. Along the banks are a great variety and profusion of flowers; the beds of primroses in particular are of the freshest hue, largest size, and most delicate perfume we ever met with. In different parts of its course, the tall and luxuriant foliage which has sprung up from the roots of the old trees, laid bare at some time almost to the surface of the ground, meet from bank to bank over the river; their mingling and arching branches reflected in all their picturesque intricacies of form in the translucent waters between. Rustic seats, placed here and there so as to command the most delightful views of the Ravensbourne and of the park, intimate that the beauty of the place is not unappreciated. The beds of plants floating in the river are very rich and luxuriant, presenting frequently interesting peculiarities of form, and almost always a vivid freshness of colour. The extremely sinuous course of the Ravensbourne adds greatly to its picturesque character. It is scarcely possible to find a dozen yards of it straight. This "river" does indeed wind "at its own sweet will," and a most vagrant will it is.

Bromley-Hill Place, the beautiful seat of Colonel Long, stands upon the summit of an eminence which slopes for a considerable distance regularly down to the Ravensbourne. On leaving the park, the river soon swells out into a fine sheet of water by the road side at South End, having in its centre a little summer-house almost hidden in foliage. From this place on its way towards Lewisham it turns various mills. At Catsford Bridge, near Rushy Green, it receives into its channel the small river Chaffinch, and after crossing Brockley Lane, the waters from the Lady-Well also,



[The Lady Well.]

which is supposed to be the great spring mentioned by Kilburn as newly breaking out of the earth in 1472. In its properties it is said to resemble the Cheltenham waters. Queen Elizabeth was very partial to this spot and neighbourhood; on a hill near the well there was formerly an oak under which the "fair vestal throned by the West" dined on one of her "Maying" visits to Lewisham. When the tree decayed, another was planted in its room, to preserve the memory of the incident. The principal stream of the Ravensbourne flows on to the left of Lewisham towards the bridge, and thence along a pleasant valley to Deptford. But a branch of the river goes through Lewisham. We find this branch issuing from a covered channel near the commencement of the town, and thence continuing its rapid course through almost the entire length of Lewisham. This and the lofty trees which on one side or the other extend all along the road, give it an agreeable country aspect. Almshouses appear to be numerous here; and some of more than ordinary pretensions have just been built by J. Thackeray, Esq. They have quite a splendid appearance, with their light-coloured bricks set off by red round the windows, their large Saxon doorway in the centre, their gable roofs at each extremity, and the nicely-paved

court, and low handsome wall extending along the front. The interior does not disappoint the expectation which the exterior has raised: each house has a capital parlour, a bed-room with double windows above, and a little kitchen opening into a court behind. The poor widows who reside here are allowed, by the generous founder, four shillings a week, and a ton of coals yearly. The church contains several fine monuments, among which are one by Banks and another by Flaxman. This last has an inscription by Hayley. Here Dermody the poet was buried, at the age of twenty-eight. His depraved habits had previously reduced him to the most deplorable distress; and it was under such circumstances that he was discovered at Percy Slough, near Sydenham, by some friends, who used every exertion for his recovery. He died, however, almost immediately afterwards. His epitaph is a quotation from one of his own works, entitled the 'Fate of Genius,' and commences thus:—

"No titled birth had he to boast,
Son of the desert, Fortune's child,
Yet not by frowning Fortune cross'd,
The Muses on his cradle smil'd."

In its progress from Lewisham to the Thames, the Ravensbourne supplies the great Kent waterworks, as well as various mills. Before we follow it any farther, let us rest one moment upon the bridge of Lewisham, and enjoy the picturesque scene before us. The Ravensbourne, as it comes through the arches, extends itself on either side along the line of the bridge, to a considerable breadth, and the front curves round a bank, half orchard, half garden, apparently, on its top, some of its lofty trees overshading the river. The sunlight is glancing among the leaves, and dancing brightly on the waters, where a graceful swan is arching its stately neck, and which, like Wordsworth's

"Swan, on fair St. Mary's lake,
Floats double, swan and shadow."

Our picture is not, however, complete without the return-chaise and the two poor jaded and dusty horses which the postboy is driving through the broad stream instead of over the bridge, to the exquisite delight of the poor animals, who have stood fast in the middle, determined to enjoy themselves while they can.

As soon as the Ravensbourne reaches Deptford (so called from the *deep ford* by which the river was there crossed), it loses its picturesque character, and flows, through a muddy and broad channel (when the tide is low), into Deptford Creek. Just before it reaches this place it is spanned by a noble bridge of three arches. Deptford Creek formed the harbour of the Danish fleets when they invaded Kent, some nine or ten centuries ago, and they lay here for a considerable time. What a contrast between their strange-looking ships, the naked shore, and the fierce half-barbarian soldiers wandering about, of that time, to the vessels, the buildings, which almost conceal the sight of the noble river beyond, and the general appearances of peaceful industry which now meet the eye in the self-same place.



[Deptford Creek.]

EXHIBITIONS OF MECHANISM AND MANUFACTURED PRODUCTS.

THE ADELAIDE GALLERY.

A RECENT article on the Polytechnic Institution, devoted to that portion of the exhibition which more particularly illustrates the arts and manufactures, may fittingly be followed by a notice of another institution somewhat similar in its objects, and also, like it, open to the public at a certain charge.

The exhibition in Adelaide Street, West Strand, belongs to a Society for the Illustration and Encouragement of Practical Science, one of whose objects is to receive for exhibition models, specimens of new inventions, and works of general interest, whether intended for sale or otherwise. It was assumed by the founders of the Society that the public display of such productions could not fail to encourage the exertions of individuals engaged in the manufacturing arts, and whose talents, from the want of being publicly known, are frequently lost both to themselves and to others; and in accordance with this view, such models and speci-

mens are received free of charge, and exhibited, generally with the inventor's name attached, in as conspicuous a manner as possible. Thus a large number of objects has been collected and formed into a public exhibition, the utility of which has been enhanced by the delivery of lectures on various branches of science and art, illustrating the uses of many of the models and instruments exhibited. These objects are nearly identical with those of the Polytechnic Institution, and there can be but little doubt that if judiciously managed there is ample room for both institutions.

The Gallery in Adelaide Street contains a miscellaneous collection of objects, some of which, we presume, for the purpose of blending amusement and elegance with practical utility, are but little connected with the main purport of the establishment. These, however, as well as the lectures, we do not intend to touch upon here; our purpose being to notice briefly the models, implements, and products illustrative of the manufacturing arts.

The objects exhibited are ranged on the floor, and in two encircling galleries of a large room called the Long Room, and in two or three smaller apartments. The floor or ground tier of the Long Room is occupied chiefly by models of steam and other engines, and by electrical apparatus. Near the door is a model of a machine for facilitating the operations of miners, by drawing up the ore or other mineral, and by lowering the miners to the required depth in the shaft. On advancing farther into the room models of steam-engines of various kinds are ranged around, some condensing, some high-pressure, others rotatory; some working models, and others merely painted. If the size of these models permitted such an arrangement, the utility of their exhibition would be increased by attaching the *names* of the more important parts, such as the cylinder, the air-pump, the governor, the parallel-motion, &c. We have so frequently heard inquiries made by visitors on such points as these, that we should venture to suggest the more extensive employment of labels and inscriptions.

Among the machines at the end of the room nearest to the entrance are a steam-gun, an apparatus for the combustion of steel, and another for the compression of water: on each of which we may say a few words. The steam-gun is an invention by Mr. Perkins, for showing the expansive force of high-pressure steam. Small leaden balls are dropped through an upright tube into a gun-barrel, through which they are propelled by a jet of steam from a boiler or boilers; the connection between the barrel and the upright tube being closed before the steam is admitted to act upon the bullets. The bullets are shot out with such force as to be flattened on an iron target at the other end of the room; and the adjustment is such that the successive bullets can be discharged at the rate of four hundred per minute. The combustion of steel is an exhibition illustrative of a striking difference between motion and rest in certain mechanical effects. A circular disc or plate of soft iron, about a foot in diameter, is connected with a steam-engine in such a manner as to rotate with the great velocity of five thousand times in a minute. While thus rotating, a file or other piece of hard steel is applied to the edge, and is cut or notched instantly, the steel flying off in a train of brilliant sparks, while the comparatively soft iron is scarcely abraded. This remarkable effect is due wholly to the great velocity of the softer body; an explanation which will avail also for the fact that a candle may be fired from a musket through a deal board. The compression of water is a problem which engaged much attention among scientific men in the last century, some deeming the liquid absolutely incompressible. Mr. Canton, however, and other experimenters, showed that water can be reduced in bulk by great pressure; and an apparatus in this Gallery, invented, like the two just alluded to, by Mr. Perkins, is intended to show within a small compass the possibility of effecting this. To understand the action of the apparatus, however, requires a little knowledge of the hydrostatic press and of hydrostatics generally.

The remark just made may be extended in some sense to other parts of the exhibition, viz. the electro-magnetic apparatus, of which there is rather an extensive collection. However praiseworthy may be the purpose for which this apparatus is placed there, it is certain that not one visitor in twenty understands its mode of operation. A shock may be sent through a number of persons, causing a momentary mirth and excitement; a magnet may be made to rotate and to yield sparks; the gymnotus, or electrical eel, may give forth sparks, and thus prove his claim to be ranked as an electrical apparatus; but very little real instruction can be gained from the inspection of such machines without a previous attention to the science to which they relate. Lectures are frequently given on these subjects in the institution, and individual inquiries are, as far as practicable, answered by the attendants; but these aids are of limited extent unless accompanied by some little study on the part of the visitor.

On a canal or reservoir of water are seen a few models of ships and other nautical apparatus; and in various parts of the floor of the room are other models, intended in most cases to illustrate some new principle or practice in ship-building. Here too are deposited several specimens of Delbruck's soldered metals, that is, pieces of metal which have been soldered by metal of the same kind as themselves. Those who are at all acquainted with manufactures in metal are aware that two pieces of metal are generally soldered together with another metal or solder more fusible than themselves; but a method has recently been discovered in France whereby the surfaces of two pieces of metal are partially melted by the flame of hydrogen gas, and united while in that state.

The upper gallery which surrounds the Long Room is chiefly noticeable for specimens of geological strata, fossil fuel, fossil plants, shells, and crystals, ranged in glass cases in a convenient position for inspection. There is also a glass case containing a large number of specimens of wood used in ship-building and for ornamental purposes. This is a very interesting series, for each specimen, squared and made perfectly smooth, is labelled, and in many instances the purposes to which such wood is applied are mentioned; such as the keel, the timbers, the knees, &c. of ships. This is one of the features which we deem to belong peculiarly to an institution of this kind, and to be worthy of extension.

The lower gallery is occupied by articles partaking more of an ornamental than of a practical character. We will therefore omit an enumeration of its contents, and proceed to speak of two or three smaller rooms connected with the two ends of the Long Room. These smaller rooms contain objects more practical perhaps than most other parts of the Exhibition, viz. series illustrative of the progressive states which a manufactured article assumes. Among these illustrative series are those relating to a knife, a fork, a file, a flask, a metal button, a candlestick, a tea-pot, a needle, hooks and eyes, combs, hats, glass, earthenware, silk, cotton, woollen, caoutchouc, asbestos, &c.

The object held in view in presenting these series is similar to that which we mentioned in allusion to the Polytechnic Institution, viz. to impart that kind of knowledge of manufacturing processes which may be acquired by witnessing the successive states which the raw material assumes. A brief explanation will show

how this is effected. A knife is represented in eight or nine different stages, from the rough bar of steel till it assumes its ultimate form of a polished knife. A fork is represented in a still greater number of forms, on account of the peculiar manner in which the prongs are produced. A button, such as those attached to suits of livery, is represented in about as many different states, from the plain blank forming the foundation, through the processes of placing and soldering the shank, fitting on the plated facing, &c. A flask, a candlestick, and a tea-pot are severally shown in a dissected form, by which the separate pieces of which each is built up may be seen, and the mode of manufacturing each in some degree explained. A needle is still more remarkable as showing the division of labour and the succession of processes involved in the manufacture: no less than nineteen specimens are ranged side by side, showing the same number of states or stages which a piece of steel wire assumes before it finally leaves the manufactory in the form of a needle: states which are produced by manipulative operation as curious as any in the whole range of manufacture. Hooks and eyes are similarly exhibited in the various steps which their manufacture involves. The materials for a hat, such as the beaver, hare, musquash, and other furs, the wool &c., are shown, first in the crude state, then as a 'batt,' then as a felted cap, and lastly, in the beavered or 'ruffed' state. Glass and earthenware are to a limited extent illustrated by specimens of the oxides, sands, clays, &c. employed in their production. The series illustrative of the cotton, woollen, and silk manufactures are very complete and interesting. Silk, wool, and cotton of a great variety of growths and produce are shown in their raw state, the various kinds laid in juxtaposition for facilitating comparison; they are then presented in their partially manufactured states, the cotton in the forms of lapps, drawings, rovings, yarn, &c., and the silk and wool in the parallel or analogous conditions. These last-mentioned specimens are very favourably placed for inspection; and we would venture to suggest that the various series illustrative of the manufactures in metal should, if practicable, be as conspicuously placed, which they are not at present.

In our No. 485 will be found an account of asbestos, a peculiar mineral susceptible of conversion into fire-proof cloth. A series illustrative of the various appearances of this substance is deposited in one of the rooms; and in another is a similar exemplification of the various uses to which caoutchouc is now applied.

We have thus briefly noticed the principal objects which seem most particularly connected with the views of the institution as regards the manufacturing arts, to which we may add a mention of the silk-looms, which are in practical operation in one of the rooms. To those parts of the exhibition which are devoted to elegancies or amusements it is not our purpose to allude.

Improvement of Poor Sand-Land.—The poor sandy heaths which have been converted into productive farms evince the indefatigable industry and perseverance of the Flemings. It is highly interesting to follow, step by step, the progress of improvement. Here you see a cottage and rude cowshed erected on a spot of the most unpromising aspect, where the loose white sand, blown into irregular mounds, is only kept together by the roots of the heath. Trenching and levelling the surface is always the first operation. A small spot only is first cultivated; but gradually the whole is reclaimed from its wild state, by the aid of unremitting industry, and above all by the dung and compost heap, and by the urine of animals. If there is no manure at hand, the only thing that can be sown on poor sand at first is broom; this grows in the most barren soils; and in three years it is fit to cut, and produces some return in faggots for the bakers and brickmakers. The leaves which have fallen have somewhat enriched the soil, and the fibres of the roots have given a certain degree of compactness. It may now be ploughed and sown with buckwheat, or even with rye, without manure. By the time this is reaped some manure may have been collected, and a regular course of cropping may begin. As soon as clover and potatoes enable the farmer to keep cows and make manure, the improvement goes on rapidly; in a few years the soil undergoes a complete change: it becomes mellow and retentive of moisture, and enriched by the vegetable matter afforded by the decomposition of the roots of clover and other plants. If about twenty small cart-loads of dung can be brought on each acre of the newly trenched ground, the progress is much more rapid. Potatoes are then the first crop, and generally give a good return. The same quantity of dung is required for the next crop, which is rye, in which clover is sown in the succeeding spring; and a small portion is sown with carrots, of which they have a white sort, which is very productive and large in good ground, and which, even in the poor soil, gives a tolerable supply of food to the cows in winter. Should the clover fail, which sometimes happens, the ground is ploughed in spring, and sown with oats and clover again. But if the clover comes up well amongst the rye-stubble, it is cut twice, after having been dressed with Dutch ashes early in spring. It is mostly consumed in the green state. The clover ley is manured with ten cart-loads of dung to the acre, and rye sown again, but not clover. After the rye comes buckwheat without any manure; then potatoes again, manured as at first, and the same rotation of crops follows. It is found that the poor land gradually improves at each rotation from the quantity of dung used. For want of sufficient manure, broom-seed is sometimes sown with the rye and clover. The rye is reaped, and the broom continues in the ground two years longer. It is then cut for fuel. The green tops are sometimes used for litter for the cows, and thus converted into manure. It is also occasionally ploughed in, when young and green, to enrich the land. Oats, clover, and broom are occasionally sown together. The oats are reaped the first year; the clover and young broom-tops the next; and the broom cut in the third. This is a curious practice, and its advantages appear rather problematical. All these various methods of bringing poor sands into cultivation show that no device is omitted which ingenuity can suggest to supply the want of manure. After the land has been gradually brought into a good state, and is cultivated in a regular manner, there appears much less difference between the soils which have been originally good and those which have been made so by labour and industry. At least the crops in both appear more nearly alike at harvest than is the case in soils of different qualities in other countries. This is a great proof of the excellence of the Flemish system; for it shows that the land is in a constant state of improvement, and that the deficiency of the soil is compensated by greater attention to tillage and manuring, especially the latter. The maxim of the Flemish farmer is, that "without manure there is no corn; without cattle there is no manure; and without green crops and roots cattle cannot be kept." Every farmer calculates how much manure is required for his land every year. If it cannot be purchased, it must be made on the farm. A portion of land must be devoted to feed stock, which will make sufficient for the remainder; for he thinks it better to keep half the farm only in productive crops well manured, than double the amount of acres sown on badly prepared land. Hence also he does not reckon what the value would be of the food given to the cattle, if sold in the market, but how much labour it costs him to raise it, and what will be the increase of his crops from the manure collected. The land is never allowed to be idle so long as the season will permit any thing to grow. If it is not stirred by the plough and harrows to clear it of weeds, some useful crop or other is growing in it. Hence the practice of sowing different seeds amongst growing crops, such as clover and carrots amongst corn or flax; and those which grow rapidly, between the reaping of one crop and the sowing of another, such as spurrey or turnips, immediately after the rye is cut, to be taken off before wheat-sowing. These crops seem sometimes scarcely worth the labour of ploughing and sowing; but the ploughing is useful to the next crop, so that the seed and sowing are the only expenses; and while a useful crop is growing, weeds are kept down.—*Rev. W. L. Rham's Flemish Husbandry.*

Cheerfulness.—Persons who are always innocently cheerful and good humoured, are very useful in the world; they maintain peace and happiness, and spread a thankful temper amongst all who live around them.—*Miss Talbot.*



[Landscape and Cattle.—Cuyp.]

GRATUITOUS EXHIBITIONS OF PICTURES.

DULWICH COLLEGE

Of that very eminent artist Albert Cuyp or Kuyp so little is known, that, save the date and place of his birth, nothing appears to have been recorded. He was the son of Jacob Gerutze Kuyp, a landscape-painter of considerable eminence at Dort, and a pupil of Abraham Bloemart. Jacob was famous for having founded in that city, in conjunction with J. Van Hasselt, Cornelius Tegelberg, and J. Grief, the Academy of Painting of St. Luke, in the year 1642. Albert was born at Dort in 1606, and received his early instructions from his father, but the style of painting he adopted differs in many most essential respects from that of the elder Cuyp. Nor do their choice of subjects less vary, for whilst those of the father are almost exclusively devoted to landscape composition in its most strict and confined sense, the pictures of the son afford us representations of nearly all the several shades of familiar life. The interiors of stables, of farriers' shops and riding-houses, views of market-places and other localities of public resort, landscapes with buildings, sea-pieces, and occasionally some compositions consisting chiefly of human figures, are among the productions of his pencil. The most frequent choice of subject in which he indulged was that wherein he could show his intimate knowledge of animal life, as in the instance at the head of this paper, which consists of a group of cattle reposing in the rich glow of the setting sun.

Description of the subject of Mr. Jackson's engraving is needless, although the principle of composition adopted by the painter may be very usefully commented on. In the greater number of the paintings of Cuyp, he aims at and most triumphantly attains to a breadth and splendour of effect unaided by strong contrast of light and shade. In this work, however, he proceeds upon a very different method, for he has thrown the whole foreground under the effect of incidental shadow, and rendered it entirely distinct from the middle and extreme distance. There is nothing more difficult of attainment than a bold relief of light and shade in landscape composition, without any apparent violation of the obvious rules of nature. Yet here we have a picture severed as it were into two distinct parts, and so skilfully managed that the mind is at once convinced of its unswerving truth. This incidental shadow to which we allude arises from a cloud intervening between the source of light and the object represented, that cloud not being seen within the limits of the picture itself. The use of this means of attaining effect is more generally used by the Dutch, the Flemish, and the English landscape-painters, than by those of any other schools. Indeed there are not wanting critics who will not allow that its adoption is within the legitimate limits of artistic management. Yet we think it would be difficult to find any one who has enjoyed the true pleasure of viewing an extensive prospect who has not again and again witnessed the exact effect which is here so admirably produced by Cuyp in the picture under notice. Nor can there be many who, having beheld that effect, are at a loss to understand the real value of its delineation.

The terms of admiration in which writers of all classes at the present day indulge when speaking of

the paintings of Cuyp, sufficiently prove the estimation in which he is held as an artist. Yet strange as it may seem, it is no less true that it is but a comparatively recent taste that has distinguished his extraordinary merit. In his own country his labours were held at the lowest estimate in market value, and it was not until an English amateur, struck with the wonderful faithfulness of the artist's pencil, became the purchaser of many of his pictures, that the dealers in Holland thought it worth their while to send them as commodities to a foreign pictorial market. Whether this apathy arose from the fact that his subjects were generally those which were daily familiar to the eye of a Dutchman, or whether from a want of perception of the astonishing power of the painter, it is perhaps as difficult to guess as it would be unprofitable to inquire. We do know that the consequence has been that in his own country his pictures are comparatively rare, while in England they abound; and although there are some of his splendid performances in the collections of her Majesty, of the Marquis of Westminster, of Lord Francis Egerton, of the Duke of Bedford, and other eminent amateurs, there is no gallery which possesses a greater store of them than that of Dulwich College.

A close, arduous, and vigilant attention to the changes of nature enabled Cuyp to represent her under all her varieties of aspect, and in all the vicissitudes of season and temperature. The freshness of spring, the warmth of summer, the glow of autumn, and the chilly discomfort of winter were alike delineated with ease and truth. The first blush of morning, the sultry heat of the mid-day sun, and the dewy eves appear rather to be reflected on his canvas than transferred by his hand. In all, whether we consider the season of the year or the period of the day he would represent, we observe how truly he has mastered all the difficulties which surrounded him. The homely landscape of his native country was sufficient for him, and he did not think it necessary to invest it with any adventitious aids. The sedgy banks of the Maes inspired him with a feeling of nature, and he only required to add those peculiar effects of light and dark to make his compositions such as he knew were most fitting for the artist's choice.

We can do no better than transfer to this place the judicious remarks of Dr. Waagen on the merits of Albert Cuyp. "The pictures of this master," he observes, "are the most splendid proofs that the charm of a work of art lies far more in a profound and pure feeling of nature, in the knowledge and masterly use of the means of representation which art supplies, than in the subject itself; for otherwise how would it be possible from such monotonous natural scenery as Holland affords, where the extensive green levels are broken only by single trees and ordinary houses, and intersected by canals, to produce such attractive variety as their pictures offer? How could it happen that so many pictures, even of eminent masters, such as J. Both and Pynaker, who represent the rich and varied scenery of Italy, have less power to touch our feelings than those of Kuyp, Ruysdael, and Hobbima? In elevation of conception, knowledge of aërial perspective, with the greatest glow and warmth of the serene atmosphere, Kuyp stands unrivalled, and may justly be called the Dutch Claude." No doubt this profound critic limits his appellation of the Dutch Claude in respect to the magnificent effects of atmosphere in which Cuyp indulged; for there can certainly be found no two painters of landscape who more vary in the comparative elevation of their compositions. Claude invests his subjects, majestic as they are by nature, with a veil of natural simplicity; whilst, on the other hand, Cuyp elevates them by the natural tints of his pencil, and by the judicious selection of the aërial effects under which he thinks fit that his composition shall be viewed.

THE BAROMETER.

THE principal means whereby the familiar but comprehensive subject of "weather" is studied, are derived from the indications of certain meteorological instruments; such as the Barometer, the Thermometer, and the Hygrometer, which measure respectively the pressure, temperature, and humidity of the atmosphere; the Pluviometer, or rain-gauge, which measures the quantity of rain fallen in a given time; and the Anemometer, or wind-gauge, which indicates the force and direction of the wind. The principles on which these instruments act, and the degree of dependence that may be placed on their indications, will successively occupy our attention. Beginning with the barometer, we find that its object is such as to require a brief consideration of the atmosphere, the pressure of which the instrument measures.

We are accustomed to consider the air as one of the lightest and most immaterial of nature's productions; insomuch, that whatever we disregard most, is deemed a "trifle light as air." But when we find that death will ensue if we are deprived of that air which we can neither see, nor feel, nor taste, nor smell; that the fire which warms us, and the candle which illuminates our apartment, are dependent on it; that the whole vegetable, as well as the whole animal world, equally depend on the air for their continued existence and support; that without the air no sound could be heard, and no light diffused; that a hurricane is nothing more than this air in motion; and finally, that air presses on the human body with a weight of many tons,—we must then cease to regard the air as a "trifle."

The chemical constitution of the atmosphere need not engage much of our attention; but it will suffice to say that atmospheric air is composed chiefly of two expansible gases, oxygen and nitrogen, in the proportion of one part of the former to four of the latter. These are the two main ingredients without which air never exists; but there are several subsidiary bodies found more or less suspended or dissolved in the air. Among these, vapour of water exists in considerable quantity. To a much smaller extent carbonic acid is also found, resulting from respiration, combustion, and fermentation. The properties of these component ingredients are very different. Oxygen is a powerful supporter both of life and of combustion; and, besides existing in air, is abundantly diffused throughout all nature. Nitrogen is altogether inert, supporting neither life nor combustion; and its use, as we at present understand it, seems to be to dilute the oxygen, and thus modify the exceedingly active properties of the latter. Carbonic acid will support neither life nor combustion; and hence the quantity of it which is constantly being produced by respiration and combustion would be fatal to us, but for a beautiful provision whereby this gas is soluble in water, and capable of being absorbed by plants, which give out pure oxygen, and thus tend to purify the air.

Although the particles of air are so far repelled from one another as to give to the whole a transparent aëriform state, yet they are all attracted by the earth in conformity with the law of gravitation—they all possess *weight*, which is but another name for one of the effects of gravitation. As we ascend from the surface of the earth, this force diminishes, and the air becomes more and more rare, until at the height of forty or fifty miles its presence is supposed to cease. It may be asked how we know that air possesses weight, since the common modes of determining weight are here of no avail? To this it may be answered, that if a thin ves-

sel be first weighed when full of air, then taken to the air-pump and exhausted of its air, and afterwards again placed in the balance, it will weigh less the second time than the first. The difference is small—one hundred cubic inches of air weighing only thirty-one grains—but still it is sufficient to lead to important consequences. It is found that a column of air, resting on the surface of one square inch at the level of the sea, weighs no less than fifteen pounds; and this is the weight which actually presses upon every square inch of surface on the earth, as well as upon all animals and bodies moving on the earth. This pressure, too, is the more remarkable and important, in being manifested in every direction, upwards, downwards, and laterally. Indeed, it is this circumstance which prevents the human body from being crushed by the enormous pressure, for there is a counter pressure exerted by the air and other fluids occupying the numerous cavities of the body.

The discovery of these important facts respecting the weight of the air was so closely connected with the invention of the barometer, that we may regard them as almost simultaneous. The circumstances are said to have been these:—Some Italian pump-makers, finding that water would not rise higher than thirty-three feet when the air was exhausted from the pipe or barrel, applied to Galileo for an explanation of the cause. Galileo's mind was pre-occupied with some confused notions respecting nature's "abhorrence of a vacuum," and he gave an answer in conformity with those notions. Torricelli, however, imagined that the weight of the air might possibly act as a counterbalance to the water in the pump, enabling it to rise to a certain height and no higher; and in order to test the truth of this opinion, he filled a tube about three feet long with mercury, then placing his finger on the open end of the tube to prevent the escape of the mercury, he inverted it, and placed the open end in a vessel containing mercury. On removing his finger, the mercury in the tube, after a few oscillations, sank until it presented a column about twenty-eight inches in height.

Now what is the just inference from this experiment? Mercury we know to be about fourteen times as heavy as water; so that twenty-eight inches of the former are equal in weight to about thirty-three feet of the latter, the diameters being equal; and as thirty-three feet was the height to which the water rose in the pumps in question, Torricelli rightly concluded that the same cause, *i.e.* the pressure of the atmosphere, determined the height both of the mercurial and of the aqueous columns. A column of air reaching to the upper stratum of the atmosphere was hence deemed to be equal in weight to a column of water thirty-three feet high, or a column of mercury twenty-eight inches high, the diameters being all equal.

Thus did Torricelli construct a barometer and make an important scientific discovery by the same experiment; and the barometer which he made is undoubtedly the simplest form of the instrument. No one but a skilful philosophical-instrument maker can make a barometer fit for service; but a long glass tube and a bottle of mercury will enable any one to show the principle on which a barometer acts. It is simply this: —While the tube is apparently empty, it is really filled with air, but on pouring mercury into the tube, most of the air is driven out; the tube then being inverted into a cup of mercury (the open end being stopped during the invertion), the mercury does not sink entirely into the cup, but remains to a certain height in the tube. The atmosphere is pressing on the mercury in the cup, tending to force it up the tube, while the very small portion of air existing in the upper part of the tube exerts but a feeble downward pressure. If a perfect vacuum existed above the mercury in the tube (which is impossible in such a rough experiment), the column of mercury would be, on an average, about thirty inches high at the level of the sea, and this column would decrease according as there was more air in the upper part of the tube.

In order to determine still more clearly the influence of the atmosphere in counterbalancing the weight of the mercurial column, Pascal carried a barometer to the mountain of Puy de Dôme, in Auvergne. At the foot of this mountain, the mercury stood at a height of twenty-six and one-fourth (French) inches; and Pascal imagined that the height ought to be less when the instrument was taken to the top of the mountain, on account of the shortening of the column of air. The mercury, in accordance with this opinion, sank to twenty-three and one-sixth inches, thus showing that the pressure of the air is less as we attain a greater altitude.

When the barometer was thus established as a measurer of the weight of the air, attempts were made to convert it into an index of the weather, by observing how far the rise or fall of the mercury in the tube was connected with any particular state of the weather. In the well-known *wheel-barometer*, or weather-glass, the tube is bent round at the bottom, so as to form a siphon with two unequal legs, the longer of which is closed, and the other open. When the atmospheric pressure is great, it depresses the mercury in the shorter leg of the siphon, and thereby drives it up the longer, and a small float, which is placed on the open surface of the mercury in the smaller tube, is depressed. This float is connected with the index-hand on the dial face of the barometer, and turns it round to the right or left, as the case may be. The dial-plate is graduated to inches and parts of an inch; and it is so arranged that the index-hand shall point to that graduated division which expresses the height of the mercurial column. So far all is well; but when we come to the words "rain," "fair," "set fair," &c., engraven on the dial-plate, we are taught to expect that rain, &c. are never-failing accompaniments of these particular indications on the barometer. Now this assumption is very fallacious, for fine weather may occur at a time when "rain" is indicated on the barometer; and, moreover, a change of *altitude* in the place of observation will change the height of the barometric column without the action of any of those causes which produce rain. The real truth is, that so far as the oscillations of the barometer are indicative of changes of weather, we must look at the tendency of the mercury to rise and fall, and not to the particular height at which it stands; without an attention to temperature, likewise, all barometrical indications are very doubtful.

Most persons are now aware that the "weather-glass" is *not* a weather-glass in the proper sense of the term. Many "rules" for using the barometer have been given, among which are those by Patrick and by Halley. These rules nearly agree with popular opinion on the matter, and are in substance as follow:—A fall in the mercury generally indicates approaching rain, snow, high winds, or thunder. A very high wind, whether accompanied by rain or not, is frequently connected with the lowest state of the barometer; but of the various winds in this country, the north-east causes the least depression. When the mercury either rises or falls pretty steadily for two or three days together, a long continuance of settled weather frequently follows—fine and dry in the former case, and rainy in the latter; and, on the contrary, frequent fluctuations in its height are incompatible with an equable state of the weather.

There is undoubtedly some truth in these rules, but they must be received with caution; for the time has not yet come for predicting with certainty the sort of

weather which will follow from a certain change in the barometer. One of the most singular phenomena connected with barometric indications is, that during what we call *heavy*, rainy weather, the air appears to be lighter than at other times, since it will not support so high a column of mercury. This we shall have occasion to advert to when treating of the moisture in the air, in connection with the hygrometer. The use of the barometer is more valuable at sea than on land, probably on account of the absence of the disturbing influence of islands, mountains, &c. The marine barometer is a really valuable instrument to the mariner, as, from a sudden fall in the mercury, he may infer the approach of a storm, and may make the necessary arrangements before the storm comes on. Dr. Arnott vividly describes a scene at sea, where the crew of a vessel were surprised at receiving orders to make preparations for a coming storm, at a time when the atmosphere was beautifully clear and brilliant. The captain had noticed an extraordinary fall in the barometer, whence he inferred the approach of a storm; and the result fully justified the precautions he had taken.

While, therefore, we guard against the fallacies of the common weather-glass, we must fully admit the importance of the barometer, when taken in conjunction with other instruments, as an aid in meteorological inquiry; and it is to increase this utility that barometrical observations are made and registers kept in various parts of the world. It is hoped that from a large mass of such registered observations philosophers may one day deduce the laws whereby the pressure of the atmosphere fluctuates; meanwhile, the rough rules given above may serve approximately to show what kind of weather seems likely to result from a particular state of the barometric column, whatever may be the unexplained causes of that state.

The barometric averages, in the monthly supplements to our last volume, indicate the average heights of the barometer, for the month mentioned, at London, derived from the experience of past years.



[Long-Woolled Sheep.]

BRITISH SHEEP.

[Concluded from page 178.]

THE middle-woolled sheep include the South-Down, the Dorset, the Norfolk, the Suffolk, and the Cheviot breeds, together with several others, and which were formerly short-woolled. The length of the staple is on the average three and a half or four inches.

That the improvement of the old short-woolled sheep into a middle-woolled race is an advantage in every sense, especially as the short wool used exclusively in the manufacture of fine cloths is abundantly supplied from foreign '*growers*' (as the term is), no one can doubt. Of this race, one of the first is the improved South-Down breed depasturing on the long range of chalky hills extending from the sea-coast of the Isle of Thanet and the cliffs of Dover through Kent and Sussex. Formerly, this breed, as Mr. Ellman states (*Libr. of Agricult. Knowledge*), was of small size, far from possessing a good shape, and late before they were capable of being fattened; now, however, they are greatly improved both in shape and constitution

"They are smaller in bone, equally hardy, with a greater disposition to fatten, and much heavier in carcass when fat. They used seldom to fatten till they were four years old, but it would be a rare sight to see a pen of South-Down wethers at market more than two years old, and many are killed before they reach that age." The South-Down sheep is in fact the model of what a hill sheep ought to be, and the flesh in fineness of grain and flavour is peculiarly excellent. The wool is of a very useful quality, but is both larger in fibre and less numerously serrated than the short Saxony, and does not therefore possess such a felting power; hence, it is rarely used in the manufacture of fine broad-cloths. Still, from its fineness and felting powers compared with the wool of many other middle-woolled breeds, it is highly esteemed,—and for flannels and worsted goods in general is extensively employed. In Surrey, Hampshire, and Berkshire, the South-Downs have either superseded or been blended with the old short-woolled sheep.

Dorsetshire possesses its own breed, encroached upon, however, by the South-Downs. The males have large spirally twisted horns, and the females have also horns, but much smaller than those of the male. Neither the wool nor the flesh equals that of the South-Down breed. The old Norfolk breed of middle-woolled sheep is very valuable, but it is rapidly giving way to the South-Down. The rams are distinguished by long spiral horns, those of the ewes and wethers being smaller; the flesh is remarkably fine, and the wool delicate and felts well. The figure of these sheep is tall and slender; the legs are long, and the face and limbs black or mottled. The general aspect is wild and animated. This breed thrives on the coarsest pasturage. The wool is not used in fine broad-cloths, but is used in such as are of inferior quality, and in woollen stuffs generally.

In Suffolk the South-Down breed prevails. The black-faced and horned sheep of Westmoreland, Cumberland, and various parts of Scotland, as Lanarkshire, belong to the middle-woolled section. With respect to their wool, these sheep do not rank high; it exceeds in length that of the middle-woolled breeds generally, but is harsh and coarse; to compensate for this, these sheep are very hardy, have an admirable contour, and the flesh in fineness of grain and delicacy of flavour equals either the South-Down or the Welsh mutton.

The Cheviot breed is very distinct from the common mountain or black-faced race, with which it is on all sides immediately surrounded, these two races dividing the north between them.

The Cheviot breed is hornless, and the general contour is excellent,—the shoulders are full, the body round and long, and the limbs small-boned. The mutton is in great esteem: and the wethers average sixteen, eighteen, or even twenty pounds weight per quarter. It appears from the testimony of practical farmers, that the attention paid to the improvement of this breed, in reference to the condition of the carcass, has been followed by a deterioration in the quality of the wool, which is said to have been formerly capable of entering into the manufacture of fine cloths. Still, however, the wool is good, though inferior to that of the South-Downs. It far surpasses that of the black-faced breed, and as the Cheviot race is equally hardy and as capable of sustaining cold as the former, and is content with the alpine plants of the bleak hills and mountains, it will soon supersede the black-faced breed, as it has already done in the forest of Ettrick and the whole of Selkirkshire, and even Sutherland. The foreknowledge which these sheep possess of approaching storms, and the assiduity with which, while the shepherd dreams of no impending evil, they will seek a place of shelter and security, are curious traits in their history. It is thus that they often warn the shepherd, by the display of this instinct, wisely implanted within them, and lead him to add his precautions to those which they have themselves adopted. In spite, however, of the vigilance of the shepherd and the instinct of the sheep, many often perish, buried beneath towering snow-drifts, and sometimes whole flocks are lost. It often happens that sufficient shelter cannot be obtained, the flock crowd together for the purpose of mutual warmth, and are soon covered beneath the snow. If this does not occur, the lambs, unable to endure the severity of the storm, perish, and the mothers, bewildered, wander about seeking their offspring, till they themselves sink exhausted with their efforts and distress. With but little food, sheep can remain for many days buried beneath the snow, but where this cannot be obtained, the period of endurance is proportioned to the strength of the animal's constitution and the intensity of the cold. In the winter of 1800, a sheep near Kendal was buried in the snow for thirty-three days and nights, without the possibility of moving, and yet survived; and a sheep in Cumberland was buried for thirty-eight days. When extricated, it was found to have eaten the wool off both its shoulders, and its frame was reduced almost to a skeleton. By due attention, however, it gradually recovered.

Having thus specified some of the more important of the middle-woolled breeds of sheep in our island, most of them, or all, derived from the old short-woolled breeds by a system of judicious management, we shall now take a hasty survey of the long-woolled breeds, of which the plate at the head of this article gives an appropriate illustration.

As we have already stated, the middle wool varies, in different breeds, in fineness and in its power of felting. Long wool is much more uniform, and for this reason, that it is the produce of the Leicester race, and of races with which the Leicester race has become completely intermingled. "All long-woolled sheep," says Mr. Youatt, "both in appearance and in fleece, are becoming one family." Long wool, which has lately very much improved, it being the aim of the breeder to render it finer (at the expense of its length, which it will bear), is characterized by strength and transparency, but it is deficient in the power of felting. Its average length is about eight inches. This applies more particularly to that sort called the long-combing wool; there is, however, a variety of long wool which approximates to the middle wool, and termed the short-combing wool, which is somewhat shorter than the other, finer, and more disposed to felt. The long-combing wool is used in the manufacture of hard yarn, and for purposes in which length and firmness are essential; the other for stuffs of a softer texture, and for hosiery goods. We have alluded to the Leicester breed as the typical example of the long-fleeced races, but it is to be observed that this breed is an improvement upon a heavy, ill-made, and coarse-woolled race, formerly spread over all our midland counties. Lincolnshire also had a breed of sheep celebrated for their fine long wool; but this breed, defective in form, and yielding mutton of an inferior quality, is now greatly improved, and in fact is blended with the new Leicester sheep.

It is not within our province to follow out the changes which have already taken and are still taking place among the long-woolled breeds of sheep, for which our island is expressly celebrated, and in which neither France nor Belgium can at all compete with the English sheep-graziers. To those who wish to gain an acquaintance with this part of the subject, we recommend Mr. Youatt's valuable work on sheep, where he

will find much information and abundant reference to various writers on agricultural topics.

There is, however, one question which suggests itself, and which we cannot omit to notice. As far as records serve us, it would seem that a long-woolled and a short-woolled (now middle-woolled) race of sheep have tenanted our island from the earliest times. Now to what are we to attribute this original difference? Are the two races descended from different primitive sources, or have food and soil gradually produced the differences which have been so long maintained? No one, we think, will hesitate to say the latter; impossible as it may be to follow step by step the progress of the change, or to determine the *modus operandi* of the causes contributing to effect it. It is, however, very remarkable that it is only in animals which have been so long domesticated that we cannot tell their primeval origin, and which there is reason to think are factitious beings (that is, the produce of different, but still closely allied species commingling together), that these extreme variations as to size, figure, and length and quality of fur are most decidedly observable. We see these varieties in the dog: from the silky long-haired spaniel of Spanish race, to the close-haired old setter of the same country; from the woolly French poodle, to the mâtin; from the rough English water-dog, to the mastiff: so in the sheep we find a short-fleeced breed, with the filaments of the wool peculiarly fine and numerously serrated; a still longer fleeced breed, again subdivided into many minor varieties, having the wool fine, and more or less capable of felting, or, in other words, more or less numerously serrated; and a long-woolled race of old standing, in which the wool, but thinly serrated, is inferior in felting properties, but of great value to the woolcomber. But further, as the mixture of a long and silky-haired breed of dogs with one of close hair does not improve the coat, the young resembling, some the male, some the female, but not equalling them in their excellences; so the crossing of long-woolled and short-woolled sheep leads to no good results; and, as with dogs, the improvement of each breed depends on a judicious and careful selection of the best and purest of that breed, by which the properties distinguishing it may be developed to their maximum in their progeny.

In England the sheep is now only valuable for the sake of its wool and flesh, but in various parts of both Europe and Asia the milk of the ewe has been used from the earliest times, either pure or curdled, as an article of diet. Formerly, in many parts of England, cheese was made from the milk of the ewe, and the ewes, to the injury of the lambs, were milked regularly, as described in the 'Odyssey,' and, at a later æra, by Virgil:—

"He next betakes him to his evening cares,
And sitting down, to milk his ewes prepares;
Of half their udders eases first the dams,
Then to the mothers' teats submits the lambs.
Half the white stream to hardening cheese he press'd,
And high in wicker baskets heap'd; the rest,
Reserved in bowls, supplied the mighty feast."
Pope, '*Odyss.*,' lib. ix.

To the process of shearing we need scarcely allude; all are familiar with the manner in which the removal of the fleece is effected, and it would seem that in the earliest patriarchal ages the same process was in use. Among the Romans, however (and the practice has been but lately discontinued in the Orkney Islands, and is, perhaps, still prevalent in Iceland), the wool was torn off the animals, and, as Pliny states, they were kept for three days previously without food, in order that the wool might be the more easily detached, their bodies being exhausted. In his time, however, the practice of shearing had begun to supersede this cruel and unjustifiable method. It gave, however, origin to the word *vellus* (fleece), from *vello* (to pull away), and the hill termed Velleia was the ancient spot on which this cruelty was perpetrated.

With us the season of sheep-shearing is a season of rejoicing, and the manner in which the important work is conducted, and the dexterity of the shearers, are, to those not accustomed to rural life, replete with interest and amusement. It is, indeed, a pleasing spectacle to see a large flock of snow-white sheep collected together, and in turn losing their soft fleece, rolled into an unbroken and well-arranged whole, beneath the shears of the shearer: the picture is full of poetry, and he must be destitute alike of taste and patriotism that can look coldly upon it.

To enter into a disquisition on the commercial importance of the sheep, its connection with national prosperity and international relationships, is not our place. We leave this to the political economist.

Before we close, let us again revert to our starting point—the question as to the origin of the domestic sheep. It is clear that we cannot identify it with any wild species with which we are yet acquainted. If such exists, it is most probably to be found on the mountains of Armenia,—but this is problematical,—and there is some ground for supposing that, though the sheep of every region intermingle with each other, they have descended from different primitive origins. The subject is full of obscurity. It is indeed strange that while history teems with the accounts of battles, massacres, invasions, the reigns and the crimes of kings, it throws no light upon the domestic animals which man has reclaimed. The motives which led man to attempt this important work, the manner in which he accomplished it, the characters and native abodes of the species selected, are buried in silence. The subject was too mean for history,—the actors too humble to be noticed: but thus it ever is, that the glare of mighty deeds effaces the record of the useful, the beneficent, and the truly great.

THE FARNE ISLANDS.

THESE islands are situated on the coast of Northumberland, from five to seven miles to the south-east of Lindisfarne, or Holy Island; and to those who are acquainted with that portion of the great north road which traverses the county of Northumberland, the following remarks might be particularly addressed, viz.: that from the town of Alnwick these islands lie due north, at a distance of fifteen or sixteen miles; from Belford their situation is due east, and the distance five or six miles; and from Berwick-upon-Tweed their position is south-east (in the same direction with Holy Island), and the distance is about the same as that from these islands to Alnwick.

These islands, which consist, exclusive of many detached rocks, of seventeen in all, are generally classed under two heads, namely, the group nearest to the shore being named the Farne Islands, while the more distant group is known by the name of the Staples. But before entering upon a short account of the most noted of the islands in question, it may not be out of place to observe, that in nearly the whole extent of sea-coast along Northumberland, from the mouth of the Tyne to the mouth of the Tweed, clusters of rocks or rocky islets frequently occur; and there is no port or harbour of any magnitude—Blyth, a small town at the mouth of the little river of the same name, and Alnmouth, another village at the mouth of the river Aln, being the chief places of this description between Shields and Berwick-upon-Tweed. Such being the nature of the Northumberland coast, it has

acquired a bad reputation among sea-faring people; for although vessels commonly keep well out to sea, when strong gales happen to come on from the east and north-east it is not always practicable to steer clear of the dangerous rocks and islets, and many are the shipwrecks and disasters that have taken place from one extremity of this line of coast to the other.

The loss of the Forfarshire steam-vessel, which took place but a few years ago, upon one of the Farne Islands, and the courageous and praiseworthy exertions of the family (the Darlings) who had charge of the lighthouse and resided on the lone island, in rescuing a number of the passengers from a watery grave, cannot but be fresh in the memories of most of our readers; and notwithstanding these islands, from various reasons, some of which shall hereafter be explained, have for centuries past been considered among the "lions" of this quarter of the United Kingdom, since the shipwreck above referred to occurred the name of Grace Darling (old Darling's daughter, without whose assistance the boat could not have been worked by which so many lives were saved when the Forfarshire was wrecked) has attracted many strangers hither who otherwise probably would never have felt any interest in visiting them at all.

The distance of the islands from the mainland, that is, from that part of the coast upon which the village and castle of Bambrough are situated, is from two to seven miles. In the group lying nearer the coast, the largest of them, the name of which is House Island, containing about twelve acres of land, is situated; and from the elevated situation of some of the cliffs along this part of the shore, on a clear day a distinct view is not only had of the inner group, but the outline of several of the more distant ones may be pretty correctly traced. This island has received the appellation of 'House' from its having been the residence for some years of the famous Bishop Cuthbert, afterwards canonized and known as St. Cuthbert; and at the present day there are still visible the remains of some buildings, including those of a small church, which are supposed to point out the spot where this austere anchorite shut himself out from the world and all intercourse with his fellow-men, nor could be prevailed upon to return to his episcopal duties until King Egfrid had repaired to his retreat, and upon his bended knees, with tears of supplication, conjured him to undertake once more those duties he was so eminently qualified to fulfil. During his residence in this lone island, traditionary reports set forth that he had several combats with the devil, and some of them were of such a fierce and terrible character, that in the tremendous struggles between the resolute combatants the devil found it necessary to exert himself so much that his feet indented the solid rock; and at the present day, when the fishermen or other inhabitants of the neighbouring villages along this part of the coast undertake to ferry strangers to this and the rest of the islands, they never omit pointing out "his satanic majesty's footmarks" along the bare rocks of House Island; and so serious is their demeanour while doing so, that their firm belief in the combats above alluded to can scarcely for a moment be doubted. But in fact the memory of St. Cuthbert is still so much venerated by the inhabitants of these parts, that to discredit almost anything which redounds to the honour or credit of this their patron saint would, even in a perfect stranger, be looked upon as quite unpardonable. Among the other curiosities of this same island is a rude stone coffin, said to be the one in which the remains of St. Cuthbert were first deposited; but after his death, which took place here (for he relinquished his see a second time, and retired to his former retreat on this island, in which he died two months afterwards), his body, for greater security, was brought to Holy Island, where it was interred with much pomp and ceremony. But it was afterwards, in consequence of marauding excursions of the Danes and Norwegians, removed farther inland, from place to place, until the mortal remains of this popular saint of the north reached Durham, where they were permitted to rest. There is also a spring of water, and a chasm in the rocks, called 'the churn,' where the beating of the waves causes a great surging of the water, which sometimes rises to the height of fifty or sixty feet.

St. Cuthbert, it is said, had such a horror of women, from the conduct of the nuns and monks of some of the adjoining religious houses, that he would not tolerate them in his presence, and had a small chapel set apart for them in the monastery of Lindisfarne. Among the many stories related of this pious but singular man, the following is duly authenticated by several eminent writers and historians, and is thus related:—"Once, when St. Cuthbert was preaching in a certain village to a crowded audience, the alarm was given that there was one of the cottages on fire; this drew a number of people from the sermon to extinguish it, which was just what Satan proposed. The more water they threw on it, the more fiercely it seemed to burn, and all efforts to put it out seemed ineffectual. The saint, missing many of his auditors, inquired the cause; when leaving off his preaching and repairing to the scene of action, he perceived it was all illusion, and ordered a few drops of holy water to be sprinkled on it, on which the devil sneaked off, and the fire disappeared."

House Island and one or two others among the two groups afford a little scanty pasturage during the summer months: but except the person in charge of the lighthouse situated on one of the Staples has occasionally been known to take over a cow or two, when he has had a family, and a supply of milk was desirable, the pasturage is of so little value that it is seldom looked after. The islands do, however, produce something that is considered of more value than the scanty grass, that is, immense numbers of wild-fowl of various sorts, the eggs of which, as well as some of the birds themselves, are turned to a profitable account: they also produce a little kelp, and some few seals are occasionally met with. But the eggs and feathers of the aquatic tribes are considered by the owner of the islands the principal articles of value, and it is mainly in consideration of these that they are rented by some person or other residing upon the contiguous coast. Among the varieties of birds frequenting these islands in vast numbers, particularly during the breeding season, may be mentioned cormorants, auks, guillemots (of which there are two or three varieties), eider-ducks, gulls of several sorts, terns, sea-swallows, sea-larks, rock-larks, &c.

To persons unacquainted with the natural history of the various different tribes of the birds in question, a visit to the Farne Islands, particularly in the breeding season, can hardly fail of proving both highly instructive and interesting: for although they may probably have met with, somewhere or another, single specimens or small flocks of most of the kinds that colonise these rocky islets, the way in which they will here see the different tribes separating themselves into distinct colonies, and the immense numbers that congregate upon some of the small rocky islands, can scarcely be conceived without being seen. The first in point of value to the parties who rent the islands is the eider-duck (called St. Cuthbert's duck by the inhabitants of this part of the coast); but it is the down of this bird, rather than its flesh, that is accounted a luxury. Hence, if the former can be procured without destroying the bird, so much the better for those who turn them to a

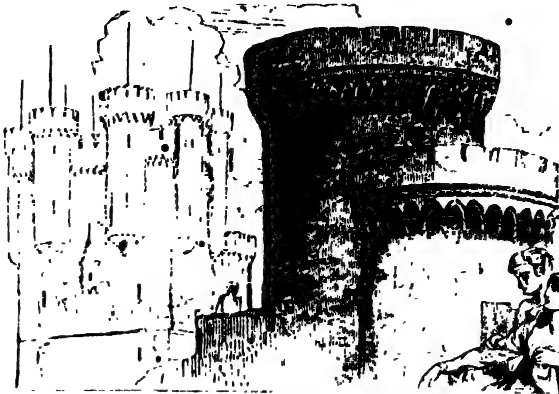
profitable account. These birds lay their eggs in little hollows among the moss-covered stones that have at some time been thrown upon the margin of the little island by the raging of the waves of the North Sea, or in grassy tufts, where a few such happen to be found; but they are not contented with forming their nests with sea-weed, moss, or the other materials that the islands may chance to produce, but they actually pull a large quantity of the finest down from their own bodies, with which they give their nests an inner lining. As their nests are upon ground quite accessible to those who frequent the islands, considerable quantities of down are extracted from them; and when the supply of old birds is considered plentiful, the eggs as well as the down will be taken away in order that the females may presently commence laying a-fresh, and thus be induced a second time to deprive their bodies of a portion of its warm and valuable covering. These birds are so tame that they sometimes suffer themselves to be caught upon their nests.

One of the outer group is named the Pinnacles, from the numerous rocks rising to the height of forty or fifty feet; and it is here that the guillemots assemble and breed in great numbers. Here, along the ledges of rock, at various heights above the chafing of the ever-restless waves, these singular-looking birds arrange themselves in compact rows, and from their dark plumage interspersed with a little white, their ranks present a very curious appearance. These birds lay their eggs in the interstices of the rocks, but since there are but few situations connected with this their favourite island that cannot be approached by those who make a business of robbing them of their eggs, but comparatively a small portion of the colonists succeed in rearing their young. The sea-larks and sea-swallows are found by thousands on some of the smaller islands, that appear exclusively appropriated to themselves; and so crowded together are their nests, that during the months of May and June, when they are laying their eggs and hatching them, it is often very difficult to walk twenty yards without treading upon the eggs or the unfledged young. During the spring and early part of summer (except in stormy weather) these islands are visited every two or three days, so that the eggs may be gathered while fresh and marketable. The owners or the parties renting them find a difficulty in keeping off intruders and depredators; for during the moonlight nights, and at such times as the authorised parties are known or expected to be absent from the islands, the sort of persons alluded to will make excursions in some round-about way (frequently dropping down from Holy Island, distant in a north-westerly direction five or six miles), and not only pilfer the eggs, down, and such young broods as may be considered of any value, but will sometimes wantonly destroy the old birds, and trample upon the unfledged young ones, and the eggs that are under a state of incubation. In short, like most other poachers and depredators, they do not seem contented with carrying off whatever plunder they are able to obtain, but appear bent upon doing as much injury as possible to those whom they are robbing of their property.

In calm weather, particularly during the summer season, this part of the eastern coast is very subject to thick fogs, which greatly increase the dangers of a rocky shore; and notwithstanding there is a sufficient depth of water for coasting vessels in most of the channels separating these islands one from another, great danger is to be apprehended from sunken rocks, some of which show themselves at low water, while others, equally dangerous, lurk just beneath the surface, but never show their tops at all. Owing also to the peculiar position of some of the islands, the current of the tides is so strong, at certain periods of the ebb and flow, that the navigation is rendered not only difficult, but exceedingly dangerous, under the most favourable circumstances.

Emigrants in Canada.—From pretty close observation during the past eight years, I have come to the conclusion that the Scotch are the best and most successful of all emigrants. Come they with or without money, come they with great working sons or with only little useless girls, it is all the same: the Scotchman is sure to better his condition, and this very silently, and almost without a complaint. Of all the sons poor Scotchmen bring out with them, scarcely any become servants. I observe they work with and for their parents, till the latter are well stocked in and securely provided for, when these young men betake themselves to land on their own account. This is worthy of notice, and should be imitated by others, as the greatest advantages are derived from the family having a head in good circumstances, and ready with its assistance in times of need. The industry, frugality, and sobriety of the Scotch mainly contribute to their success; and such habits are absolutely necessary to be rigidly followed by poor settlers on first entering the "bush." I have carefully watched the progress and result of the Scotch, Irish, and English emigrants, in the race to the goal desired by all, namely, to obtain a deed for their land, and find that where all have appeared to me to be equally well mounted, and had precisely the same course to go over and the same hills of difficulty to ascend, the Scotchman is generally first in at the winning-post. Next to the Scotch, I am of opinion that the Englishman comes in for his meed of praise; but it is infinitely more difficult to speak of him than of his Scotch and Irish neighbours, as every shade and grade of character, conduct, and success is to be found amongst the English in this place and the neighbouring townships: suffice it to say, that were it not for a considerable number of good men from Yorkshire and Nottinghamshire, who are prospering in this part of Canada, I must have left my own countrymen to be noticed last. Generally speaking, English families do not hold together long enough to ensure success; the sons of poor English emigrants leave their parents, and become servants at the usual high wages, and, instead of saving money to purchase land, the same is squandered away in fine clothes and at the numerous country balls, &c. This course is followed up by taking a wife, becoming a common labourer, and hiring a smart house in the town, where he is determined his wife shall wear as rich a silk dress on a Sunday as any lady in the place. The lowest characters we have in Guelph, and pests they are, turn out to be English drunkards. I do not intend to make any attempts to deprive our Irishmen of their well-earned and well-known forte in making, occasionally, more noise than any other men when a little "high;" but, in common, I find them more at their farms, or at their respective callings, than the English are. The English "gentleman farmer," who lost, in a very few years, in the old country, nearly all he possessed on starting in life; and thus, by living beyond his means, neglecting his farm, and too hotly and constantly pursuing the hounds, comes to Canada a very unlikely man to succeed; such a man grumbles dreadfully at first, curses his hard fate, then the country, then the government, than the Canada Company, and every man who ever wrote a line or said a word in favour of Canada. Onward, however, he goes, by fits and starts, now determined to try, again to give up; but, after a few years, we hear less and see more of this man, because his mind is sobered down, and he looks upon things as they really are; he sees and feels that he is doing well in spite of himself; that he has an estate of his own, has no dread of "rent-day," nor landlord; has no tithe to pay, no poor-rate, and almost no taxes of any kind. Should crops fail, or prices be very low, we never see a farmer "break" or "fail" in this neighbourhood; and the reason is, because the outgoings of a farm are very small, and the farmer can easily reduce them to any extent he pleases till things go better. . . . The rapid strides made by the plain, sober, hard-working English labourer or small farmer of the old country are truly worthy of our admiration and regard; with these men, capital seems not to be essentially necessary to their success.—*Dr. R. Alling, Emigration Agent at Guelph.*

Truth will ever be unpalatable to those who are determined not to relinquish error, but can never give offence to the honest and well-meaning; for the plain-dealing remonstrances of a friend differ as widely from the rancour of an enemy, as the friendly probe of a physician from the dagger of an assassin.—*E. W. Montague.*



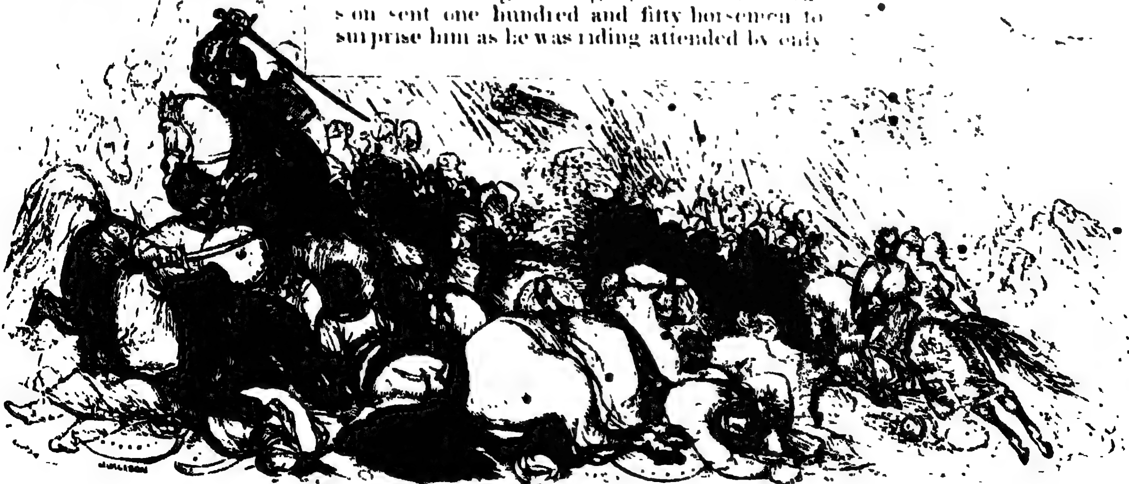


THE CID.—No. VIII.

"Then strike, my knights, with joyous hearts' be valiant in the war,
For I'm Rodrigo of Bivar, the Cid Campeador!"
Poem of the Cid.

It were a tedious task to follow the Cid in his long and unremitting course of hostilities against the Moslems after his exile from Castille. The romances indeed omit all mention of many of the exploits he performed during this period, as recorded by the Poem and the Chronicle.* Yet we must not pass them over in utter silence. In the short space of three weeks he won two strongholds from the Moors and defeated a powerful force sent against him from Valencia. Thirty horses, part of the spoil, each with a scimitar hanging at the saddle-bow, he sent as a present to King Alfonso, who received the gift, and gave permission to any of his knights to join the Cid's standard but thought it yet too early to grant him pardon. Rodrigo continued his forays into the Arab territory, ravaged it far and wide, laid many of the principal cities in the east of Spain under tribute, and gained great spoil and greater glory. He even extended his incursions as far south as Alicant. Nor was it the Moors alone with whom he had to contend, for he signally defeated and captured Ramon, count of Barcelona, and won from him the famous sword Colada, "worth more than a thousand marks of silver." He also worsted Don Pedro, king of Aragon, who on one occasion sent one hundred and fifty horsemen to surprise him as he was riding attended by only





a dozen knights; but the hero's individual prowess saved him, and he routed the Aragonese and captured seven of their number, whom, with his wonted generosity, he immediately set at liberty.

The fortress of Rueda had been wrested from the Castillians by the Moors, who had also treacherously slain Ramiro, the son of Don Alfonso. This monarch thereon recalled the Cid from banishment, and prayed him to march against Rueda and reduce it. Rodrigo kissed the royal hand, but refused to accept the offered pardon, unless the king would pledge his word that thenceforth every hidalgo under sentence of banishment should have thirty days allowed him before going into exile, to prove, if possible, his innocence; for, said he,

"'Ne'er should be a vassal banish'd
Without time to plead his cause;
Ne'er should king his people's rights
Trample on and break the laws;

Ne'er should he his liegemen punish
More than to their crimes is due,
Lest they rise into rebellion—
That day sorely would he rue.'"

The king pledged his word to this, and the Cid marched against Rueda, was as usual victorious, and on his return was received with all honour by his grateful sovereign. This took place A.D. 1081.

We next find "the good one of Bibar" captain-general of the Christian force before Toledo, which for some years had been besieged by Don Alfonso; and on its surrender, in 1085, the Cid was appointed its governor. The ill-will of the king towards him was not, however, entirely removed, but being kept alive by the malicious representations of the Cid's enemies, a pretext was soon found for a renewed sentence of banishment. He pursued his former course of hostilities against the Moors, and with the like success, and ere long had carried his victorious arms to the gates of Valencia, which city he resolved to make his own, and therefore sent heralds through Castille, Aragon, and Navarre, proclaiming that all who loved a merry life and a glorious might join his standard, but they must come out of pure love of blows. Adventurers flocked to his camp from all quarters, and his force soon amounted to three thousand six hundred men. He then laid siege to the city.

In his camp was an Asturian knight, named Martin Pelaez, of stout and powerful frame, but of a weak and craven spirit. When the Cid and his followers were one day engaged in deadly combat with the Paynims, this Pelaez left the fight and returned secretly to his tent, where he remained concealed till the battle was over, and the Christians, weary with the work of slaughter, returned to refresh themselves in the camp.

"The Cid he sat him down to eat,
With him of his knights sat none,
For it was his daily wont
At his board to sit alone.
At another sat his knights,
All who were of high renown."

For so did the good Cid ordain, that their valour might be made known to all, and that the rest might strive to emulate them in the field.

"Thinking that my Cid Rodrigo
Had not witnessed his shame,
In came Martin, neat and cleansed,
Straight unto the board he came;
Where did sit Don Alvar Fañez
With his mighty men of fame.

Up the good Cid then arose,
Seiz'd his arm, and whisper'd low,
'Friend, to eat with these great warriors
Is not meet for such as thou.
These are knights of proved valor,
Better men than we are they;
Sit thee then at this my table,
Of my viands eat, I pray.'

Down then sat he with Rodrigo,
At his board with him did eat;
Thus the Cid with wondrous mildness
Did rebuke him, as was meet."

After the meal, the Cid, with the same considerate gentleness, took him aside, and in plain terms upbraided him with his cowardice. "Is it possible," said he, "that a man nobly born as thou art, can fly through terror of the strife? Knowest thou not that it is honorable to die on the battle-field? Better hadst thou turn monk; peradventure thou mayest be able to serve God in the cloister, though thou canst not in the war. Nathless, try once more; go forth this evening to the fight, place thyself at my side, and let me see what spirit thou canst show."

Deeply did Martin feel this rebuke, and grievous was his shame. He resolved to go forth to the field, and strive to redeem his character. Accordingly, the next day, when the Cid and his host rode up to the very gates of Valencia,

"Martin was the first that rushed
Headlong on the coming foe;
No fear then, I wot, he proved,
Wondrous valor he did show;
His right arm wrought grievous slaughter,
Many Paynims he laid low.

As they fell right fast before him,
'Whence this furious fiend?' they cried:
'Ne'er have we beheld such valor;
None his onset can abide.'"

The Saracens were driven back into the city, and Martin returned to the camp, his arms bathed in blood up to the elbows. The Cid stood awaiting him, and warmly embracing him, said, "Friend Martin, thou art verily a good and doughty knight. No longer must thou eat with me at table; henceforth thou shalt sit with Alvar Fañez, my cousin-german, and my other knights of highest valor and renown." From that day forth Martin Pelaez proved himself a right valiant knight, and thus, says the romance, was exemplified the proverb—

"Who to a good tree betakes him,
Shelter good he there will find."

The Valencians being hard beset and hopeless of succour, an aged prophet ascended a lofty tower on the ramparts, and when he beheld the city so fair and beautiful, and the camp of her enemies pitched against her, his heart smote him sore, and he sighed forth this lament:—

"'Oh Valencia! my Valencia!
Worthy thou to rule for aye;
But if Allah do not pity,
Soon thy glory must decay.

Lo! I see thy mighty ramparts
Shake and totter to their fall.
Yea, thy proud and lofty towers,
And thy snowy turrets all,

Which thy sons rejoic'd to gaze on,
As they glitter'd from afar,
Woe! I see them sink and crumble—
Ruin doth their beauty mar.

See, thy fertilizing river
Now hath stray'd from out its bed;
All thy springs and gushing fountains
Now are dried up at their head.

Green thy fields and fair thy flowers
As they once in beauty shone;
Now their beauty is defiled,
All their bloom and odour gone.

Yonder broad and noble strand,
Once thy pride and once thy boast,
Now by foot of foe is trampled—
By Castilla's robber host.

Rapine, death, and desolation,
On thy land these Christians pour;
Yea, the smoke of yonder burnings
All the landscape doth obscure.

Gone are all the charms which made thee
To thy children so divine.
Could these walls but weep and wail thee,
They would add their tears to mine.

Oh Valencia! my Valencia!
Allah quickly succour thee!
Oft have I foretold what now
Sore it grieveth me to see.'"

After a siege of ten months the Cid gained possession of the city, A.D. 1094, and, says the poem—

"Right joyful was the Perfect One, with all his men of might,
To see upon Valencia's keep his banner waving bright.
All who were squires were dubbed knights for their deeds' sake that day;
How much of gold each soldier won, I prithee, who can say?"

According to the romances, he made a mild and generous use of his victory. He gave orders that the dead should be buried and the sick and wounded attended to, and cheered the citizens by assuring them that respect should be paid to their persons and property, for that though fierce and mighty in war, he was mild and gentle in peace. But the Moorish chroniclers tell a different tale, and relate the cruelties inflicted upon the unhappy governor of Valencia by the tyrant Cambitor (Campeador), "Allah curse him!" Rodrigo's earliest care was to appoint a Christian bishop to his newly-won city—"God! how all Christendom did rejoice!" His next, to despatch Alvar Fañez to Burgos to pray the king Alfonso for the company of Ximena and his two daughters, whom he had left in the care of the abbot of S. Pedro de Cardeña. He told Don Alvar to take with him thirty marks of gold for the expenses of their journey to Valencia, and as many of silver for the abbot.

"'To the worthy Jews two hundred
Marks of gold bear with all speed,
With as many more of silver,
Which they lent me in my need,

In my knightly honor trusting;
But I basely did deceive,
And in pledge thereof two coffers
Full of nought but sand did give.

Pray ye of them, for my solace,
Pray them now to pardon me,
Sith with sorrow great I did it
Of my hard necessity.

Say, albeit within the coffers
Nought but sand they can espy,
That the pure gold of my truth
Deep beneath that sand doth lie.'"

He sent also to the king Alfonso, "his own good and liege lord," a rich gift of captives, horses, and treasures, and instructed Don Alvar what to say:

"'Say, friend, to the king Alfonso,
May it please him now to take
This unworthy gift and offering
Which a banish'd lord doth make;

Yea, unworthy all in value,
But some favour in his eyes
It may gain when that ye tell him
'Tis of Christian blood the price.

In two years with my good faulchion,
I have won more land than he
Did inherit from his father;
(May he now in glory be!)

Tell him, all this land and treasure,
All I've won with my good sword,
I do hold of him in fief,
As a vassal of his lord.

Yea, I pray God that my prowess
To his wealth may increase yield,
While my heel can strike Babieca,
While my hand Tizona wield.

One boon only I do ask him—
Can I crave this boon in vain?
That he send my lov'd Ximena,
And my tender daughters twain,
Dearest treasures of my bosom,
To relieve my lonely pain.'"

Alvar Fañez faithfully executed his mission, and repeated his lord's words in the presence of the king at Burgos. Hardly had he ceased speaking, when a certain count, one of the Cid's enemies, arose, and warned the king to beware of deceit, and give no credit to what he had heard. "Perchance the Cid meaneth to follow his gift, and beard thee to thy face on the morrow." Alvar Fañez plucked his bonnet from his brows, and replied, all stammering with rage,

"'Let none stir, upon his peril!
Speak not! none of ye—take heed
That the Cid himself is present,
For I stand here in his stead!

Who will dare to utter falsehoods—
Foul and lying words declare?
In the Cid's name, I do warn him,
Let him of his head have care!'"

Then remembering in whose presence he had spoken, Don Alvar, as a loyal knight, asked pardon of the king, without however retracting aught that he had uttered. The result of his mission was that he carried back to Valencia Ximena and her two daughters, to the great joy of the Cid.

Soon after this, the great Miramamolin, king of Tunis, landed on the Spanish shore, with 50,000 horse and a countless host of foot, to wrest Valencia from the hands of the Christians. Rodrigo took Ximena and his two daughters to the roof of the highest tower in the Alcazar, or citadel, and showed them this vast armament.

"Toward the sea they cast their eyes—
Foes did swarm along the coast;
Round about the town they looked—
Everywhere a mighty host.

Tents were pitching, trenches digging,
All to battle did prepare;
Shouts of men, and war-steeds neighing,
Drums and trumpets rent the air."

The ladies were terrified at this novel sight, but the Cid, stroking his long beard, cheered them.

"'Fear not thou, my lov'd Ximena,
Fear not ye, my daughters dear,
While I have to wield Tizona,
Ye, I wot, have nought to fear.'"

"See ye not," he added, "that the more numerous the foe, the richer will be the spoil, and the larger your dowries, my daughters?" Verily my heart swelleth now that ye are present!"* Perceiving then that some of the Moors had entered the orchards near the city,

* This saying of the Cid, "The more Moors, the more gain," became proverbial in Spain, and continues so at the present day.

he despatched Don Alvar Salvadores with two hundred horse to drive them out, and make a slaughter of the pagan dogs for the gratification of the ladies. This was done, the Moors were driven out, but Don Alvar, too eager in the pursuit of the flying foe, was taken prisoner.

On the morrow, "he who in a lucky hour girt the sword," as the Poem frequently terms the Cid, made a general sally against the Moors, the bishop of Valencia, who, like many of the ecclesiastics of that day, was as expert with the sword as with the mass-book, marching in complete armour at the head of the troops. The small band of Christians soon found themselves in imminent danger of being hemmed in by the overwhelming hosts of the foe:

"But my good Cid, this perceiving,
Rushed on the enemy;
'Gainst their ranks he spurr'd Bibieca,
Shouting loud his battle-cry,

'Aid us, God and Santiago!'
Many a Paynim he laid low;
To despatch a foe he never
Needed to repeat his blow.

Well it pleas'd the Cid to find him
Mounted on his steed once more,
With his right arm to the elbow
Crimson'd all with Moorish gore."

The Moors took to flight and were pursued with great slaughter by the Christians, who took the Moslem camp, where they found Don Alvar Salvadores, with a vast booty in gold and horses, "and the richest tent ever seen in Christendom," which the Cid sent, together with part of the spoil, to "Alfonso the Castillian." The king, overcome by the Cid's noble forgetfulness of wrongs, thereon granted him pardon and restored him to favour.

Law and Interest.—A member of a sick club sued the stewards for one pound eight shillings, four weeks' pay. They declared he was not a member. It appeared by their articles, which ought to be the criterion of right, that the club assembled once a week; that every absent member forfeited a certain sum, and by non-attendance for six nights he forfeited an accumulated sum of about seven shillings, and his right to membership. When this man had absented himself till the arrears swelled to eleven shillings, he applied to the club, solicited to be taken in, and agreed with the members present that he should be reinstated, paying all arrears. Being in health, it was their interest to keep him. Elevated with ale and prosperity, which often raise a man above himself, instead of paying his arrears, he d——d the club, and declared he would leave them. He was immediately taken ill, and, applying to the club, insisted upon his right of membership; but the scale was now turned: it was their interest to shake him off, and his to adhere to them. As he was likely to become burdensome to the parish, the overseers interested themselves in his favour, offered to pay the arrears, and wrote to the bench. Court.—"Every society of men is governed by a body of laws of their own; nay, it is that body which constitutes them a society; you must *act* and we must *try* by these laws. It does not appear that a member can by absence contract a debt of more than seven shillings. When this happens, all connection ceases. Though the members in full assembly may, by their majority, make bye-laws for the good government of their body, yet they cannot make one new or abrogate one old law without the consent of every individual. If this was allowed, a cabal might be very mischievous in voting away a man's right or property. In the words king, lords, and commons is comprehended every person in the kingdom. They can, by their joint consent, alter, form new, or annihilate old laws, but no alteration can take place without the consent of the whole body. The king and the commons can make none without the lords, nor the lords and the commons without the king. Each can make bye-laws for their own good government, but no fundamentals can be created without the whole. As every law affects somebody, it cannot be carried without the consent of that somebody. As this man has forfeited his right by non-attendance, his share of the fund became the joint property of every member; consequently the consent of every member was necessary to reinstate him. Each man might give back his own, but no man could give another's; it follows, his being re-voted into the club by a majority, and his d———g himself out, no way affect the case; he had lost his right prior to either. Instead of a claim upon them, they have a just demand upon him for seven shillings, as arrears for non-payment.—*Knight's Miscellanies:—Life of W. Hutton: Decisions of Court of Requests.*

London Stone—stood anciently on the south side of Cannon Street, pitched upright, near the channel or kennel, according to Stow, who adds, that it was "fixed in the ground very deep, fastened with bars of iron, and otherwise so strongly set, that, if carts do run against it through negligence, the wheels be broken, and the stone itself unshaken." Possibly the cart-wheels were made stronger afterwards, the better to stand the perils to which they were thus exposed; for it is pretty evident that the old stone has not always had the best of it in such encounters. It is now reduced, judging from what may be seen of it, to a fragment not a great deal larger than a man's head. Still, even this relic of so ancient and venerable a monument is interesting and precious; and we ought not to omit the name of the worthy citizen to whom we owe its preservation—Mr. Thomas Maiden, of Sherbourn Lane, printer, who, it is said, when St. Swithin's Church was about to undergo a repair, in 1798, prevailed on the parish officers to consent that the stone should be placed where it still remains, after it had been doomed to destruction as a nuisance. For before this it stood close to the edge of the kerb-stone, on the same side of the street, to which, it seems, it had been removed from its original position on the opposite side, in December, 1742. Its foundations were uncovered in the course of the operations that took place after the great fire, and were found to be so extensive, that Wren, who does not appear to have doubted that they were Roman, was inclined to think that *they* must have supported some more considerable monument than even the central milliarium. "In the adjoining ground to the south, upon digging for altars," we are told in the *Parentalia*, "were discovered some tessellated pavements, and other extensive remains of Roman workmanship and buildings." "Probably," adds the account, "this might in some degree have imitated the *Milliarum Aureum* at Constantinople, which was not in the form of a pillar, as at Rome, but an eminent building; for under its roof, according to Cedrenus and Suidas, stood the statues of Constantine and Helena, Trajan, an equestrian statue of Hadrian, a statue of Fortune, and many other figures and decorations." The recorded history of London Stone, we may add, reaches beyond the Conquest. Stow found it mentioned as a land-mark in a list of rents belonging to Christ's Church in Canterbury, at the end of "a fair-written Gospel-book" given to that foundation by the West Saxon king Athelstane, who reigned from 925 to 941.—*London*, No. 9.



London Stone



[Petra [illegible] rowned at Rome, from a painting by Jofanelli. Avignon, with the old Roman bridge, and Vaucluse, from lithographs by Lemercier. Tomb at Arquà, from a print by Turner.]

LOCAL MEMORIES OF GREAT MEN.

Petrarch.*

During one of the journeys of this great poet, after he had achieved the reputation which still makes his memory so deservedly dear to his countrymen, he passed through Arezzo, the place of his birth. At his departure, the principal persons of the town waited upon him to pay their respects, and to point out the house in which he had first breathed. "It was a small house," says Petrarch, "befitting an exile, as my father was." He was informed that the owners had been about to make some alterations in it: but the authorities interfered, and caused the whole to be preserved, as it was on the circumstance which had given to Arezzo its chief claim to the agreeable remembrances of posterity. That event occurred in the night between the 19th and 20th of July, 1304; and was attended by two memorable incidents. His mother was in imminent danger of her life in giving birth to him, and his father Petracco who had been banished from Florence with Dante and

* For the various quotations from Petrarch's writings interspersed through the following paper, we must express our acknowledgments to the very interesting Life of the poet just published by our own distinguished bard, the author of the 'Pleasures of Hope,' Thomas Campbell.

other eminent men, was almost at the same hour engaged with his party (one of the two factions, the blacks and the whites, or, as they called themselves, the Neri and the Bianchi,* into which the Florentines were divided) in an unsuccessful attack upon their native city. The troubled circumstances that thus surrounded the earliest years of Petrarch, were but types of the wretched state of things he was to witness through his entire life in connection with his beloved country, torn from one end to the other by factions and families. After the defeat of the white party, to which Petracco belonged, he was obliged to sever himself from his wife and child: he wandering about from place to place, doing as he best could, and his wife and infant son, to whom the sentence of banishment did not extend, removing to a small property the family possessed at Ancisa near Florence. In their way they crossed the Arno; and the guide, a robust peasant, carried the child hung in a swaddling-cloth over his shoulder. Whilst they were in the deep part of the river, the guide's horse fell; and amidst his own and the mother's frantic efforts to raise it, the whole party had nearly perished. After seven years spent in this unhappy way, Petracco took his family to Pisa; and thence, in 1313, to Avignon, when once more the young poet's history had been well nigh brought to a summary conclusion by the threatened shipwreck of their vessel off Marseilles. One of the earliest indications of the future tastes and genius of Petrarch may perhaps be found in his remark, when taken to see the lovely landscape around the fountain of Vaucluse, a few leagues from Avignon. "There now," he cried rapturously, "is a retirement suited to my taste, and preferable in my eyes to the greatest and most splendid cities." Of the permanency of the impression Vaucluse made upon him, we shall find a sufficient testimony some twenty years later. At Avignon, then the seat of the luxurious papal court, Petracco found everything too expensive for his reduced circumstances; so, in 1315, he removed to the small town of Carpentras. Here Petrarch learned grammar and logic from one Convennole de Prato, a man of meagre attainments, but with sufficient intelligence to appreciate his pupil's character and abilities. Petrarch exhibited, long afterwards, his gratitude for the kindness and respect with which he had been treated; when De Prato, being very old and very poor, received considerable assistance from the poet's scanty income. At the age of fifteen, Petracco sent his son to Montpelier, and afterwards to Bologna, to study the law; but, like several other poets similarly destined, young Petrarch found it much more delightful to seek and make acquaintance with the choicest passages in his favourite authors, than to busy himself in the subtilties of legal lore. Petracco on one occasion came to Bologna, in the hope of checking his son's growing passion for literature. The latter, aware of his approach, hid his Virgil, Cicero, and such other few books as a student with small means could obtain before the introduction of printing; but Petracco discovered the hidden treasures, and threw them upon the fire. His son's agony at the loss was however too much for the parental heart: Petracco rescued Virgil and Cicero from their purgatory, and returning them to the poet, said, "Virgil will console you for the loss of your other manuscripts, and Cicero will prepare you for the study of the law." The death of both his parents in 1326, however, left his future career entirely at his own disposal. He and his brother now entered the church, having first settled the family affairs, which they found much disordered by the dishonesty of the executors. But Petrarch tells us, with great gratification, that, in their ignorance, they had left him what he esteemed as the most valuable part of his patrimony, a manuscript Cicero, highly prized by his father. He was now but twenty-two years old, when he settled with his brother in the licentious and profligate city of Avignon; and we need not therefore wonder that he did not pass through the temptations that there surrounded him with entire safety. His person, voice, and manners were all of an unusually seductive character; and he was in no slight degree vain of them. "Do you remember," he writes to his brother (at a time when all such follies had passed away), "how much care we employed in the lure of dressing our persons? When we traversed the streets, with what attention did we not avoid every breath of wind which might discompose our air; and with what caution did we not prevent the least speck of dirt from soiling our garments." This attention to his person, at the same time, was not allowed to interfere with the great business of his life, the cultivation of his mind. He studied earnestly, and transcribed the works of every valuable writer that came in his way. Such was the only and most un-"royal" road to learning in those days. Petrarch's first compositions were in Latin: but he was wise enough to perceive early the advantages of writing in his native "vulgar tongue," as the Italian was then called. And certainly he found that tongue very different from the state in which he left it. The improvement Dante had commenced, Petrarch may be said to have almost finished: under his cultivation it acquired a new elegance and richness. Among the numerous friends and patrons which the manners, abilities, and general and increasing reputation for learning of the poet attracted, were John of Florence and James Colonna. The former was one of the pope's secretaries, and to him Petrarch entrusted all the anxieties caused by a sense of his own faults, by his desires to approve himself worthy of the vocation to which, in common with all other great men, he felt himself to be called, and by his keen sensibility to the distracted state of Italy; and, in return, he received such appropriate advice and sympathy, that he says he never left him without finding himself more calm and composed, and more animated for study. James Colonna was the third son of the nobleman of the same name, a member of one of the most ancient and illustrious families of the country. Petrarch, at the conclusion of an eloquent passage descriptive of his admirable qualities, says, "He gained the first place in my affections, which he ever afterwards retained." We arrive now at that great event in the poet's personal history, which has certainly, by its romantic character and consequences, assisted in no slight degree to make Petrarch one of the most popular of writers.

Petrarch relates that exactly at the first hour of the 6th of April, he saw Laura, in the church of the monastery of St. Clair, at Avignon, where neither the sacredness of the place nor the solemnity of the day (Good Friday, probably) could prevent him from being smitten for life with human love. He saw a lady, a few years younger than himself, in a green mantle sprinkled with violets. "Her face, her air, her gait, were to him superhuman. Her person was delicate, her eyes were tender and sparkling, and her eyebrows black as ebony. Golden locks waved over her shoulders, whiter than snow, and the ringlets were interwoven by the fingers of love. . . . . Nothing was so soft as her looks, so modest as her carriage, so touching as the sound of her voice. An air of gaiety and tenderness breathed around her, but so pure and

* The Neri and Bianchi were the names of two branches of the Cancellieri family at Pistoia, who, on being expelled from that town, carried their feuds and their designations into Florence. Both, however, were Guelphs, although, from the Bianchi having subsequently joined the Guibelines, they have been sometimes confounded with them.

happily tempered as to inspire every beholder with the sentiment of virtue, for she was chaste as the dew-drop of the morn. Such, says Petrarch, was the amiable Laura.' * The most accurate writer the world has ever known, where the "facts" concern the human heart, has taught us, in his 'Romeo and Juliet,' what a first love may be in those delicious southern skies—sudden but permanent; and of this character was Petrarch's unhappy attachment. Laura was already the wife of another. In our own country and time we should justly attach something criminal to the love that not only survived a discovery of that nature, but gloried in proclaiming its existence: it would, however, be wrong to measure Petrarch by such a standard. The customs of Italy, as well as the licence generally allowed to poets, justified him in offering and Laura in accepting his respectful attentions and admiration; and whatever pain the acquaintance brought to either, it was not embittered by remorse. On one occasion, Petrarch appearing to presume upon Laura's favour too far, she said to him, with a tone and manner of extreme severity, "I am not what you take me for."

[To be concluded in our next.]

* Campbell's 'Life,' vol. ii., p. 386.

THE EAST INDIA COMPANY'S MUSEUM.

The exhibitions open gratuitously to the public in London are not so numerous as those in many other European capitals; but a feeling in favour of the more liberal extension of this system is spreading, and we may not unreasonably look forward to increased facilities in this respect.

Among the exhibitions of this character in the metropolis is that of the Museum belonging to the East India Company, at their house in Leadenhall Street. In our notice of this great commercial body, in the fourth volume of the Magazine, the museum is alluded to as an exhibition well worthy of a visit, but requiring an order to a director for the admission of a visitor. We do not exactly know at what period a change has been made in this respect, but at the present time the Museum is thrown open to the public between the hours of twelve and three o'clock on Saturdays. We will endeavour to convey a general idea of the principal objects there deposited.

The extraordinary series of events by which the East India Company obtained such gigantic power, brought the agents and officers of the Company in frequent communication with various Asiatic princes, both within the territories of Hindostan and in the adjacent countries; and, in the course of these communications, many opportunities offered for collecting objects or specimens illustrative, in different degrees and in various modes, of the manners, customs, arts, and natural history of the Oriental countries. These objects, having been from time to time presented to the East India Company, or consigned to their keeping, by right of conquest or by treaty, have accumulated to a considerable number, and a suite of apartments in the East India House has been appropriated to their reception.

On passing into the hall at the principal entrance, in Leadenhall Street, we turn to the left hand, and go through two or three passages to the foot of a staircase. Then, ascending about forty stairs, we arrive at a kind of corridor, the walls of which are lined with pictures relating to Oriental subjects, and at each end of which is a door leading to several apartments. An inscription-board directs the visitor to the right hand as the way to the Museum, and the left hand to the Library, the former of which we will describe first, and the latter afterwards. A few stairs at the right-hand end of the corridor lead to a long passage, having a range of doors—mostly belonging to private apartments, not available to the visitor—on the left hand, and a range of windows on the right. This passage contains a few paintings, prints, and drawings, illustrative of Indian scenery and buildings; also models of nautical vessels used in the East, such as a Chinese war-junk, a Sumatran proa, &c., together with a few natural objects, such as dried skins of remarkable animals, specimens of bamboo, &c. At the end of this long passage we come to three small ante-rooms, or lobbies, one within another, and the inner one opening into a room of larger dimensions. The first of these ante-rooms contains, near the window, a curious Burmese musical instrument, shaped somewhat like a boat, and having a vertical range of nearly horizontal strings, which were probably played by means of a plectrum, or wooden peg. Opposite this instrument is a case containing models of implements illustrative of the arts and manufactures in India, such as looms, ploughs, mills, smiths' bellows, coaches and other vehicles, windlass, pestle and mortar, and numerous others; and on the two remaining sides of this room are various small specimens, some illustrating the natural history and others the manufacturing processes of the Oriental nations. In the second or middle ante-room are numerous specimens of dried and stuffed snakes, fishes, &c. such as are found in India. From the second ante-room we turn to the right, into the third, where we find, beneath a window, a very curious Burmese musical instrument, consisting of twenty-three flattish pieces of wood, from ten to fifteen inches in length and about an inch and a half in width; these bars are strung together so as to yield dull and subdued musical notes when struck with a cork hammer; and their sizes are so adjusted as to furnish tones forming about three octaves in the diatonic scale. Whether the weekly exercise to which these bars are subjected by visitors has influenced their tones, we do not know, but the notes of the gamut are not now remarkable for accuracy.

From this last ante-room we enter a tolerably large square room, lighted by six windows, three on each of two opposite sides. This room is surrounded by glass cases, between the doors and windows, containing objects chiefly illustrative of Asiatic natural history. Those on the right-hand side are occupied by stuffed specimens of Sumatran mammalia. On the side opposite the entrance are Indian mammalia and birds, such as the tapir, the tiger, the panther, &c. The left-hand side is occupied principally by Siamese birds, and the entrance side by Javanese birds. On various parts of the floor of this room are isolated glass cases, one occupied by specimens of Eastern shells, another by butterflies, moths, and beetles, and others by birds.

Returning from this room, along the passage before alluded to, we see an open door at the right hand, leading to a small room containing a few objects of interest. There is a model of a raft, another of a Chinese house-barge, and another, of very elaborate workmanship, representing an Eastern temple. A petticoat and mantle, belonging to a female of a cannibal race in the Eastern seas, are here deposited, and furnish a curious example of ingenuity and love of ornament among those who are deficient in one of the most prominent attributes of humanity. In an adjoining case are various objects, brought from Java, apparently intended to serve in some kind of theatrical exhibition among that people. In other parts of the same room are sabres, daggers, hunting-knives, pipes, bowls, models of musical instruments, and various other small matters, brought principally from the islands of Java and Sumatra, and serving to illustrate some of the usages of the inhabitants of those places.

We have now glanced through that range of apartments which is designated the Museum, and will next,

in a similar manner, notice the contents of the three rooms designated the Library. From the corridor separating the two departments a few stairs on the left hand lead to a handsome square room, partly occupied by books, and partly by Oriental curiosities. The books here deposited are, of course, not intended for the perusal of visitors, and it would be a very unworthy return for the liberality of the Company, if attention were not paid to the rule that these books are not to be touched by visitors. On entering this room, an attendant desires the visitor to give his name and address, which are entered in a book: one entry, we believe, will avail for a party of visitors. This preliminary form, which used also to be observed at the British Museum, having been gone through, we proceed to glance round the room. On the entrance side are many specimens of painted tiles, such as are used in the East for walls, floors, ceilings, &c. Over and at the left of the fireplace are various idols, such as are worshipped by the Buddhists of Burmah and other nations beyond India, some made of white marble, some of dark stone, and others of metal or wood. The next side of the room, on the right, is occupied by pieces of stone, once forming parts of Buddhic shrines, thrones, and idols, sculptured with inscriptions, processions, &c. The side opposite to the entrance is occupied partly by books, relating chiefly to Oriental subjects, and partly by idols, beads, trinkets, and reliques of the Buddhic religion, among which is a very lofty dark-coloured idol, representing one of the Buddhic divinities. The fourth side of the room is occupied almost wholly by books, and does not, therefore, call for remark, except in relation to a singular document which is framed and hung up against the wall. This is the original petition presented by the East India merchants to Oliver Cromwell, praying that he would send a ship of war to the Bay of Biscay, as a protection to a fleet of merchantmen expected to arrive from India, in consequence of a threatened attack by the Spaniards. The petition is signed by about thirty merchants belonging to the East India Company, and on another part of it is the answer, in Cromwell's hand-writing, directing the Commissioners of the Admiralty to take measures in conformity with the prayer of the petition.

Various parts of the middle or floor of this room are occupied by objects more or less interesting. There are three cases containing very elaborate models of Chinese villas, made of ivory, mother-of-pearl, and other costly materials; and from the middle of the ceiling is suspended a Chinese lantern, of large dimensions, made principally of thin sheets of horn, and highly decorated. Three or four glass cases contain various small articles, brought from India and China, such as an abacus, or Chinese counting-machine, Chinese implements and materials for writing, for drawing, for engraving on wood, and for printing; the often-described miniature shoe of a Chinese lady, Chinese weighing and measuring instruments, Oriental weapons, models of palanquins and other carriages, specimens of tea in various stages of its preparation, a Chinese compass, and trinkets of various kinds. On the floor of this room is also placed a piece of mechanism which gives us some insight into the modes in which Eastern princes amuse themselves. This is an "emblematic organ," once belonging to Tippoo Sultan, and consisting of a tiger trampling on a prostrate man, whom he is just about to seize with his teeth. The interior contains pipes and other mechanism, which, when wound up by a key, cause the figure of the man to utter cries,—intended, we presume, for cries of distress,—and the tiger to roar. Intellectual amusement, this, for a prince! *

* See 'Penny Magazine,' vol. iv., No. 216, p. 319.

From this room we pass, through an ante-room, or small apartment, into another room, which may more particularly be called the Library. The ante-room is chiefly occupied by a splendid howdah, or throne, adapted for the back of an elephant, in which Oriental princes are wont to travel from place to place. A considerable portion of this howdah is made of solid silver, and the various decorations are of a costly character. It was taken by Lord Combermere, at Bhurtpoor, and by him presented to the Museum. The walls of this small apartment are covered with swords, daggers, and other arms of Oriental construction, together with a few other objects not calling for particular remark.

Passing from thence we find ourselves in the last room belonging to the suite thrown open to the public. The right-hand side of the room, opposite the windows, is filled wholly with books and maps, the latter fixed on rollers and deposited in cases. The farther side is in like manner occupied; but a few cases beneath the windows, on the third side, contain objects of curious interest, especially to those who have any acquaintance with Oriental languages. These are manuscripts and books, written on the kind of paper, or substitute for paper, common in India, Burmah, &c., and in the native language of the country. Among these is Tippoo Sultan's 'Register of Dreams,' with his interpretation of them, in his own handwriting. The copy of the Korán belonging to Tippoo is also deposited here.

Those who are acquainted with the general contents of the British Museum will perceive, from the above details, that the curiosities deposited in the India House are of a different character, on account of their peculiar relation to Asiatic countries. The British Museum is by no means largely supplied with Oriental curiosities and rarities, and on that account the Museum to which this article relates is well worthy of a visit.

An Etruscan Tomb.—On opening the door, the torches illuminated a chamber nineteen or twenty feet square, with a ledge all round it, on which were laid with great regularity ten or a dozen sarcophagi. They were covered with their lids, each having a well-executed figure of nenfrite or terra cotta as large as life, and sometimes of a size almost colossal, representing either men of grave and substantial appearance, with torques round the neck, and ring on the finger, holding in their hand a patera for libations; or of elegant and richly dressed ladies, their heads adorned with ivy and myrtle wreaths, their ears with graceful pendants, their necks encircled with chains, and their arms with bracelets. Behind each figure was a number of vases piled up in irregular heaps, and some of them hanging above them by bronze nails on the wall. . . A larger sarcophagus than any of the others stood in the middle of the chamber. It was uncovered, and contained what remained of the skeleton and armour of the head of the family of Velthuri. There he lay, with his helmet, his greaves, and his two spears, after the fashion of classical antiquity; and all around him in the coffin there was the strangest assemblage of little odds and ends that ever I saw. If we may be permitted to judge of the old warrior's tastes by the things which were buried with him, he must, in his day and generation, have been a passionate lover of *rococo*, with very little discrimination; in short, a collector of trash. . . There were quantities of little pieces of enamel, and transparent-coloured pastas; clear stones or compositions, some like topaz, and others like amethyst; balls of perfume; utensils of bronze, of all sorts, shapes, and sizes, and all manner of uselessness. And lastly, I pulled out what gave me rather an unpleasant insight into Signor Velthuri's character, and a bad idea of the employment of his lighter hours—a pair of dice, which, if my memory fails me not, were *loaded*. . . Another and more awful consideration was forced upon us by a closer inspection of this large sarcophagus. On both sides of it there is unequivocally represented a human sacrifice. Whether this relates to any act of Velthuri's life, I will not undertake to decide. . . But the subjects of the bassi-rilievi of sarcophagi have often no relation to the individual, but are national and historical.—*Mrs. Gray's Tour to the Sepulchres of Etruria.*

A DAY AT A SHIP-YARD.



on the Stocks, building; and Ship in Dock for repairs.'

To the inhabitants of a sea-girt country, such as England, a ship must ever be an object of interest and admiration, whether regarded as the substitute, the more than substitute, for stone-walls as a defence, or as the channel whereby commerce is carried on with foreign countries. As a work of art, too, a ship has at all times and in nearly all countries called forth expressions of wonder. We may or may not, as we please, give credence to the opinion expressed in Dryden's lines:—

> "By viewing Nature, Nature's handmaid, Art,
> Makes mighty things from small beginnings grow:
> Thus fishes first to shipping did impart,
> Their tail the rudder and their head the prow;"

but certain it is that, whether fishes were or were not the first ship-draughtsmen, the art of constructing barks capable to a greater or less degree of contending with the winds and waves, has been known from a very remote period.

The steps by which excellence in this art has been attained, the countries in which the art has been most fully developed, and the present state in which it exists in foreign countries, form collectively the materials for a history of naval architecture, a vast subject, into which it is not proposed here to enter. Neither does naval warfare, with its combined miseries and triumphs, fall within the scope of this article. We propose to give a description, derived from personal observation, of an establishment which ranks, we believe, at the head of the private ship-building yards in this country: to convey an idea of the general nature of the operations conducted in such establishments; and to trace, as far as the necessary limitations of popular language will admit, the order of processes by which the more important parts of a ship are constructed and put together.

The ship-yard to which we allude is that belonging to Messrs. Green, Wigrams, and Greens, to whose courtesy we owe the facilities for working out the plan of this number. The locality of the yard is somewhat remarkable, occupying, as it does, a nook on the banks of the Thames at the eastern extremity of the metropolis. We hardly know whether to place it in London or in the country, for the smoke of the one and the green fields of the other almost meet at this spot. Leaving this matter, however, as one of no importance, we will take an imaginary trip down the river to Blackwall, in order to indicate the position of this yard relatively to what is termed the 'port' of London generally.

In proceeding eastward from London Bridge, past the Custom-house, the Tower, the St. Katherine's Docks, and the London Docks, we find the northern shore of the river occupied chiefly by wharfs and by traders engaged more or less in matters connected with maritime affairs; but it is not till we arrive somewhat farther down the river that ship-building yards, properly so called, are seen. A northerly bend in the river, from nearly opposite the London Docks, constitutes that part which is called 'the Pool,' and which brings us to Limehouse. Here we find a remarkable curve in the river towards the south, and near this spot are the

yards of Messrs. Curling and Young, and other ship-builders, some for ships generally, some for iron steam-boats, &c. The river, for the next three miles of its course, is so tortuous that it almost encircles and encloses a tongue of land called the Isle of Dogs; a curvature which comprises within its limits Limehouse Reach, Greenwich Reach, and Blackwall Reach,—*Reach* being a term which watermen and others apply to particular parts of the river. Whether or not it is true, as old Stow tells us, that one of our early kings kept his hounds in this neck of land, and that their constant barking procured for it the name of the Isle of Dogs, is a problem which we will not wait to solve, but will proceed onward to the eastern extremity of this little peninsula, passing a few smaller ship-yards in our way. Here we come to the eastern boundary of the West India Docks, which stretch nearly across the narrowest part of the Isle of Dogs; and a short distance onwards brings us to the yard and docks of Messrs. Green, Wigrams, and Greens, occupying a river-frontage of a quarter or from that to a third of a mile. Beyond this we arrive at the quay or wharf in front of the eastern terminus of the London and Blackwall Railway; with the Brunswick Hotel on the left, the entrance to the East India Docks on the right, and the well-known mast-house (a tall red building of which we shall have more to say presently) in the rear, together with numerous ships in the East India Docks. As a general statement, therefore, we may say that this dock-yard occupies the principal part of the tract of ground separating the East India from the West India Docks, opposite to that part of the Kentish coast called Bugsby's Marshes, between Greenwich and Woolwich.

With regard to the position of this yard on the land side, little need be said. High Street, Poplar, leads down to the immediate neighbourhood of the yard; and the Blackwall Railway, for a part of its distance, skirts it on the north; indeed the railway passes through a portion of ground once belonging to the yard. The lofty chimney belonging to the railway is very near the mast-house, and both are separated from the yard by the railway itself.

Such, then, is the locality of these premises. The private history of commercial establishments does not in general fall within the scope of our articles; but there are circumstances connected with the past history of this yard which are not only interesting in themselves, but serve to explain a certain link of connection between the yard and the East India Docks.

The existence and active operations of this ship-building yard extend back through a period of a hundred and ninety years; for we find that during the Protectorate of Oliver Cromwell the yard was in the possession of Sir Henry Johnson, a liberal man, who seems to have contributed much to the improvement and benefit of the neighbouring hamlet of Poplar. During the Commonwealth, and the reigns of Charles II., James II., and William and Mary, Sir Henry Johnson and his son, who was also knighted, appear to have been much engaged in building the government ships; for there are records still left of about fifteen men-of-war, of from 50 to 70 guns each, built in the yard before the reign of Queen Anne. Strype, in his edition of Stow's 'Survey,' makes frequent mention of the two Sir Henry Johnsons, one or both of whom existed in his time; and also gives us a few quaint anecdotes and details relating to the yard or to its neighbourhood, which, however, are of too trifling a nature to be quoted here. The history of the yard during the early part of the last century is not very clearly to be traced; but Lysons, in his 'Environs of London,' states that the elder Sir Henry Johnson died in 1683; that the second Sir Henry succeeded to the property; and that on the marriage of the daughter of the latter to the Earl of Strafford, the possessorship of all the estates and property passed into the Strafford family.

Just a century ago, the name of Mr. Perry first appears as the owner of the yard; and in the family of the Perrys it remained for about half a century, during which period many of the men-of-war employed in the American war, and in the earlier stages of the revolutionary war, were built for the government at this yard. About the year 1789, we first hear of a commercial dock built in immediate connection with the yard. Ever since the great fire of 1666, the port of London had remained almost unaltered with respect to docks or havens for shipping; and the merchants began to experience great inconvenience from the limited facilities afforded in this respect. Under these circumstances Mr. Perry constructed a dock which he called the 'Brunswick Dock,' adjoining the north-east boundary of his building-yard. This dock was a commodious quadrangular basin, capable of containing at one time twenty-eight East Indiamen and fifty or sixty ships of smaller burden. On the southern quay, which was eleven hundred feet in length, were cranes for landing guns and heavy stores; on the east quay were conveniences for receiving blubber from the whale-ships, as well as coppers for boiling, and warehouses for storing the whale-bone; on the west quay was erected the mast-house, which still remains a conspicuous object from the river, and the purpose of which, as we shall hereafter more fully explain, was to provide a more convenient apparatus for masting ships than that which is generally employed.

Such was Perry's 'Brunswick Dock,' which appears to have been employed as well for government as for private commercial purposes; for cavalry were often embarked from the quays of this dock during the war-like transactions in the latter part of the last century. But the Brunswick Dock did not long remain private property, as the time soon approached when it became part of the East India Docks. Up to the year 1800, not one of the splendid public docks now situated on the northern bank of the river was in existence; but a spirit had sprung up and gone abroad which speedily led to the formation of these conveniences for maritime traffic. A company of West India merchants opened, in the year 1802, the West India Docks, across the northern part of the Isle of Dogs, from Blackwall to Limehouse; about the same time the Corporation of London opened the City Canal, also across the Isle of Dogs; two years later another company of merchants opened the London Docks, between the Tower and Shadwell; and lastly, in 1806, a company of East India merchants opened the East India Docks, including, as a component part, the Brunswick Dock, which the Company purchased of Mr. Perry. The East India Docks consist of an import and an export dock, the latter of which was the Brunswick Dock. By this arrangement the mast-house, situated on the western quay, became likewise the property of the East India Dock Company, in whose possession it still remains.

These transactions relative to the Brunswick Dock did not disturb the regular progress of ship-building in the adjoining yard; for it appears that throughout the war the building-slips were constantly occupied with war vessels and East Indiamen. Indeed so active were the exertions at one time, that in the year 1813 no less than ten ships of war and one East India-man were launched from the yard within twelve months. As we have wished to touch upon these matters only so far as they elucidate a few important points in the past history of the port of London, it will be unnecessary to allude to the changes of proprietorship in the yard since the time of Mr. Perry, farther than to observe that the accession of Mr. Green, and after-

wards of Sir Robert Wigram to the firm, placed the proprietorship in the families of those gentlemen, in whom it still remains, under the names of Messrs. Green, Wigrams, and Greens.

We have to apologise to the reader for keeping him waiting so long outside the gate of the ship-yard; but we have thought that the preceding details, by explaining some of the external relations of the yard, will render what is to follow better understood. We will suppose the reader, then, to have accompanied us on the Blackwall Railway (for the great world of London is almost too far westward to admit of the excursion on foot), and to have been set down at the Poplar station, within three or four minutes' walk of the yard. In Brunswick Street, on the eastern side of the way, we perceive the gateway leading to the yard, over and on the left of which is an old family mansion, once, we believe, the residence of Sir Henry Johnson, and, in all probability, constantly occupied since his time by one or other of the partners in the firm.

On proceeding within the entrance gates, past a porter's lodge, the dwelling-house just alluded to lies on the left hand, while the offices and counting-houses, together with another dwelling-house, lie on the right. We soon get past these, and then find ourselves in the open yard of the premises, a large expanse of ground, occupying not less than thirteen acres. Here a multitude of objects all crowd upon the eye at once, presenting a scene of uncommon bustle and liveliness. Immediately on the right is a range of buildings apparently occupied as warehouses. Beyond these is the river, glistening in the sunshine, that is, if the weather be kind enough to admit the sun to peep through the clouds. Between the river and the eye, at short intervals, and along a great extent of shore, are seen ships of various sizes, and in all the various stages of construction, from the small steamer, to the large East Indiaman—from the mere shell of frame-timbers, to the majestic ship just about to be launched; and also old ships undergoing repairs. Between these ships and the spot where we suppose ourselves to be standing near the entrance, the ground is occupied, here and there, with enormous piles of timbers, some cut to the forms required by the shipwrights, others partially sawed and hewn, and others in a rougher state Glancing the eye round towards the left, we catch sight of a building in which a large clock serves as a monitor to all the workmen, and on the left of which is a shed where some of the timbers are cut. In the background, and towards the northern boundary of the yard, are numerous large buildings, separated from one another by tracts of ground covered in most parts by piles of wood. A third dwelling-house, occupied by one of the partners in the firm, is seen also in this direction; and the mast-house, the lofty chimney belonging to the Railway, and the shipping in the East India Docks, appear to skirt the wall of the yard.

A living scene is also presented to the eye at this spot, for on all sides are seen workmen plying the ingenious hand, and the lusty arm too, in the operation of ship-building; some standing on scaffolds at the sides of the ships; some 'converting' the timbers, that is, sawing them to the required shapes; some conveying or superintending the conveyance of timbers from one place to another; some stripping off the old copper from ships under repair; some bringing new sheets of copper to supply its place; smiths in this spot, mast-makers in that; and scores of others which we should find it no easy matter to enumerate. But when one o'clock strikes: here is a change! It is almost worth a dinner to see the hive of workmen flocking out to *their* dinner. We happened to be near the entrance at such a moment, and could not help remarking the striking change in the appearance of the yard after four or five hundred workmen had thus left it in the course of a few minutes. All became perfectly silent and lifeless, and the huge ships had a temporary respite from the beating and battering to which they had just been subject. As two o'clock approaches, straggling workmen come in by ones, twos, and threes; and by a few minutes after two, the stream of industry is pouring back again to the ships.

Such is the general aspect which the yard presents to the first view of a visitor. We will now, therefore, in company with the reader, ramble through the numerous departments of the establishment, noticing the various purposes to which the different parts of the yard are appropriated.

After entering at the outer gate, and passing the counting-house, we will turn to the right, and visit the range of workshops and store-rooms, extending from thence to the river. The first room which need be enumerated is the office of the ship-draughtsman, who is a kind of architect, employed in drawing the plans and arranging the forms and dimensions of ships, preparatory to the operations of the shipwrights. In this room are a few small models of ships, together with the necessary apparatus and drawing instruments for preparing the plans on paper. The operations of the ship-draughtsman are, as we shall explain presently, much more of a mental than a mechanical character, and, therefore, the room in which he is engaged presents little peculiar to attract our notice.

From the draughtsman's room we passed into a large and singular-looking room, called the *mould-loft*, or *moulding-loft*. It is about a hundred feet long and forty or fifty wide, rather shallow, and lighted by about twenty windows, ten on each side. The floor of this room is remarkably flat, smooth, and clean, and is chalked in every imaginable direction with lines, some straight and others curved, intersecting each other at angles of different degrees. A part of this floor, free from chalk lines, is separated from the rest by a ledge, and on this part are fixed carpenters' benches and stools, with the necessary arrangements for sawing and preparing wood-work. It is evident, at a first glance, that the chalked floor is a kind of sanctum, a place not to be defiled by the tread of dirty shoes. Over head is seen, resting on cross-beams, a large assemblage of pieces of thin wood, in most cases long, narrow, and curved. The operations carried on in this room are midway between that of preparing the drawing and that of actually building the ships. The purposes of the chalk marks on the floor and of the thin pieces of wood will be explained farther on.

Beneath the mould-loft we entered, among other rooms, one in which a number of little boys were busily



engaged in 'spinning oakum,' a process respecting which we may say a few words. When the various cables, stays, shrouds, ropes, &c. belonging to a ship have gone through their term of service, and are no longer strong enough to be used, they are cut up into pieces, and then pulled asunder, all the hempen threads being loosened and disentangled one from another. In this state the hempen threads are called *oakum*, which is of different qualities, according as the original rope was or was not tarred. This oakum is sent to the yard in bundles or hanks, and boys are then employed to roll —or, as it is termed in the yard, 'spin'—it into loose portions called 'threads.' A small bundle of fibres is rolled by the hand on a sloping board, till it assumes the form of a loose irregular kind of rope, averaging probably about an inch in thickness. These 'threads' of oakum are subsequently driven into the crevices or seams in the outside of a ship, to prevent the entrance of sea-water.

Adjoining the oakum-shop is a capstan-shop, a place where the ponderous capstans for ships are made. Here we saw an elegant-looking mahogany capstan, intended for the quarter-deck of a vessel then in progress. The capstan, being intended for moving heavy weights, must necessarily be of great strength, while its position on the quarter-deck leads to the desire of giving it somewhat of an ornamental character. It therefore constitutes a separate kind of work both from that of the shipwright and that of the ship-joiner, and is carried on in a distinct shop. Near this spot is also the copper warehouse, in which the sheets, bolts, and other articles of copper are stored away, under the care of the foreman of the copper department. In the course of building a ship, a great number of copper bolts, varying from half an inch to an inch and a half in diameter, are employed; these are cut to the proper lengths from bars kept in the copper warehouse. Patent alloyed metals, composed of copper and zinc, are sometimes used in parts of the ship, and these, as well as articles of copper only, are served out to the workmen from this warehouse.

Over the copper warehouse is a sail-maker's shop, where the canvass and necessary apparatus for making sails are deposited. In front of all these warerooms and shops the ground of the yard is occupied with heaps of wood, intended for different purposes, some to be employed in various departments of ship-building, and some—useless in other respects—intended as billet or fire-wood to be used at sea.

Proceeding onward towards the river, we fell in with some workmen making trenails, or tree-nails, and



wedges. A trenail is a wooden substitute for a bolt or nail, and is regarded as a thing of much importance in ship-building. The frame-timbers of a ship, forming its skeleton, are, as we shall hereafter explain, covered inside and out with thick planks, and these planks are fastened to the timbers almost wholly by trenails, the copper bolts employed being comparatively few in number. These trenails, so far from being made of any odd pieces of waste wood, are formed of the soundest oak, whose grain is straight and regular. They vary in size from a foot and a half to three feet in length, and from one to two inches in diameter, according to the size of the vessel, or to the part where they are to be employed. The pieces of oak which may be selected for this purpose are first sawn to the proper length; the trenail-makers then rip each piece into a number of smaller pieces, and finally reduce them to a tolerably cylindrical shape by means of spoke-shaves, occasionally passing a ring over each piece to regulate the diameter. These trenails are generally kept for many months, to season, before they are employed in the ship. Those pieces of oak whose shape or direction of grain does not qualify them for trenails, are cut into wedges, for the use of the shipwrights in various parts of their operations; and those which will not be available even as wedges are consigned to the billet-heap.

Near the spot which we have just passed are the buildings connected with the smithery. First we meet with the coal-house, filled with the fuel necessary for the operations of the smiths; and next to it the building where the swarthy sons of Vulcan are at work in an atmosphere by no means enviable. The articles made in this shop do not comprise either the ships' anchors or the chain cables, for the making of these are distinct trades, never, we believe, carried on in a private ship-building yard: but they consist of the numerous other pieces of iron-work used in the construction of a ship. The most important of these, perhaps, are the iron *knees*, which connect the beams beneath the deck of a ship with the sides, and which are a kind of bracket, with branches extending in horizontal and vertical directions, perforated for the reception of bolts. These knees are made of iron bars or plates welded together to the proper thickness and width, and fashioned to the required shape. Smaller articles, in great number and variety, are made in a similar manner, the operations being conducted almost in precisely the same way as in a common smith's shop, but on a larger scale. The fierce fires of small-coal built upon the ground, the bellows for exciting the heat, the anvils, the huge sledge-hammers—some weighing nearly thirty pounds,—all are seen here, on a scale which seems to rank midway between that of a common smithery and of an anchor-smith's shop. A separate shop, behind the other, is devoted to the casting of such articles as are formed of cast-metal, and to the cutting, turning, &c. of others in which neatness of appearance is required. It need hardly be observed, that these shops are black, smoky, and hot, a necessary result of the operations carried on there.

Adjoining the smithery is an ironmonger's shop, stored with all kinds of ironmongery for the use of the yard. The circumstance generally strikes a stranger on visiting large establishments of this kind, that the whole is divided into departments as distinct from one another as if they were under different proprietors. In this yard, for instance, the copper and iron stores, however similar they may seem to be in their nature, are in two distinct departments, kept in distinct buildings, and placed under the control of different foremen, each of whom is responsible for the disposal of the property placed under his care. It is evident that, were some such plan as this not adopted, great confusion and uncertainty would prevail, involving frequently a serious misuse of materials. In the ironmonger's shop

not only bolts, nails, screws, &c. are kept, but also tools, such as saws, axes, adzes, hammers, augurs, shovels, &c.

By scrambling over timbers and planks, at the imminent danger of our shins, we next reached the last building in this range, appropriated to the reception and storing of rigging; and beyond this is a small wharf or shed, where articles may be landed from the water.

We have now reached the river side, and find ourselves in view of a very pretty bend in the river, presenting Greenwich Hospital and the surrounding objects in one direction, and the course to Woolwich in the other. The river-frontage of the yard stretches nearly in a direction south-west and north-east; and as we are now at the extreme south-west corner, we will continue our ramble to the north-east extremity, keeping as close to the river as we can.

Within a few yards of the south-west corner, we came to a building-slip, where the frame-work belonging to a vessel of three or four hundred tons burden was being set up. It may perhaps be as well to explain here what is meant by a 'building-slip.' When a ship is about to be built, it is necessary to select a spot of ground from whence the vessel, when finished, may be readily passed into the water. For this purpose, a sloping tract of ground is dug or prepared, larger than the full dimensions of a ship, and at right-angles to the river. This channel is level with the ground at the upper end, but is several feet beneath that level at the lower end, and open to the water. On this inclined slip of ground a ship is built; and at a certain stage in the progress, the gates, which had shut out the water from below, are opened, and the ship launched into the river. Such then is the nature of a building-slip. The one to which we allude is probably about a hundred and thirty feet long by thirty broad: and on it was the rude skeleton of a vessel, formed of curved oak timbers, and supported by shores, poles, and other mechanism.

We then passed over a platform placed across the mouth of the slip, to a kind of quay or wharf on the other side, occupied chiefly by timbers, planks, and other materials for building. This narrow strip of ground occupies the space between the slip just described and a large well-built dry dock nearly three hundred feet long and about twenty in depth. This dock is different, both in shape and purpose, from the building-slip. It is an excavation entirely below the level of the ground from end to end, slightly inclined towards the river, and open to it at the lower end, where folding gates shut off the communication when required. Docks of this kind are not employed for building ships, but for repairing them; and the arrangements for docking are as follow:—When a ship is about to be brought into dock, a row of blocks are laid along the bottom of the dock; and the gates are opened at or about the time of low water. As the tide rises, it flows into the dock to the same level as the river; and when there is a sufficiency of water in the dock, the ship is floated into it, and guided as nearly as can be into the centre. While the tide is going down again, the water flows gradually out of the dock, and the ship sinks deeper in consequence; so that by the time low-water has again arrived, the dock is nearly emptied of water, and the keel of the vessel rests on the blocks beneath. In the mean time preparations have been making for securing the ship in her proper position, by shores, ropes, &c., so that she shall stand vertically on her keel; and at or about low-water the gates are shut, not again to be opened until the repairs of the vessel are finished. In this way a ship is dry-docked, and workmen can then descend into the dock, and examine every part of the ship's bottom down to the keel. The dry-dock of which we are now speaking is a double dock; that is, the length is sufficient to receive two large vessels at the same time. Here we saw two vessels, one an East Indiaman undergoing the process of re-coppering, and the other a smaller vessel in course of repair. In the former, tiers of stages were built round the hull of the vessel; and men were busily engaged in stripping off, by means of a kind of adze, the old and worn copper from the planking, in order to replace it with new.

Separated from this large dock by a narrow piece of ground is another dry-dock, smaller in size, but constructed in a similar manner. Here was another East Indiaman undergoing repairs of a very extensive kind, on which a number of men were employed; some re-trenailing the outer planks, some repairing masts, &c.

Next to this dock is a building-slip, from which, about the middle of April last, the steam-vessel Princess Royal, of 700 tons burden, was launched. After a ship has been once launched, she is brought back to one of the dry-docks, where the finishing operations are conducted. A building-slip, after a launch, remains unoccupied until arrangements are made for laying down a new ship, when the ground is cleared, and the blocks laid for the keel of the new vessel. At a few yards eastward of this slip is a third dry-dock, similar in every respect to the one on the opposite side of the slip, and, like it, occupied by a three-masted vessel in course of repair. But the next dock we come to is of a different kind, being a wet-dock. Here barges and boats, laden with timber and other stores for the use of the yard, enter from the Thames, and proceed to a kind of basin in the centre of the yard, round which are quays where the goods may be landed, and the water of which serves as a mast-pond in which masts are kept.

On crossing this wet-dock, we came to another slip, on which an East Indiaman is in course of building. This fine vessel, which is called the Agincourt, is of about a thousand tons burden, and will probably be launched before this number makes its appearance. Shipwrights and ship-joiners were busily engaged upon it; the former driving the trenails through the planks and timbers (a process which is not done until the trenail holes, made with an augur, have been well aired and seasoned) or caulking the seams with oakum; and the latter putting up the interior fittings of the vessel.

Proceeding eastward from the Agincourt we came to a large space of ground filled with an enormous quantity of oak in the rough state. Whole trunks of trees, portions of trunks, and large branches, some of the most tortuous shapes, were heaped up to a height of twelve or fifteen feet, just in the state they left the forest. These were British oak-trees, landed on the quay of the yard, and waiting to be converted into frame-timbers, beams, &c. for ships. Adjoining this timber-quay, and farther within the yard, are sheds and saw-pits wherein the trees are cut up to the desired forms and sizes.

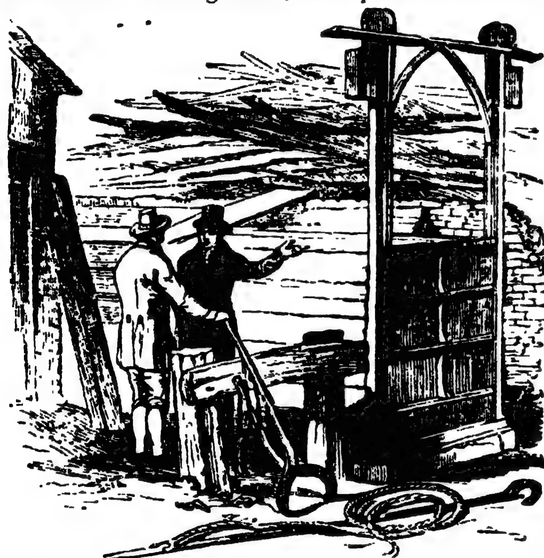
Our progress eastward next brought us to another building-slip, where was another East Indiaman, the Southampton, precisely equal and similar to the Agincourt, and, like it, advancing rapidly toward completion. This part of the yard appeared the most busy and life-like of all, for the saw-pits and sheds, and the yards belonging to them, are bounded on either side by the two slips on which the large vessels were in course of construction.

When we come to speak of the process of building ships, we shall illustrate many of our remarks by reference to these two vessels, which we have seen in different stages of their progress, and the fine proportions of which render them conspicuous objects in the yard.

Next to this was another slip, unoccupied at that time; but beyond it was one in which a steamer of nine

hundred tons burden was in progress. This steamer was somewhat farther advanced than the vessel at the west extremity of the yard having some of the planking laid on; but not so far advanced as the Agincourt and the Southampton. Beyond this slip was a fourth dry-dock, the most eastward of the whole; and in this, as in the others, was a large three-masted vessel undergoing repair. This dock is bounded by another quay, filled with oak timber in the same manner as the one between the two new slips, and contiguous to another range of saw-pits. And after having passed this we arrive at the eastern extremity of the yard, separated cnly by a public road from Lovegrove's Brunswick hotel.

We have now traced the whole extent of the premises on the water-side, and have next to notice the buildings in the middle and on the northern side of the yard. The yard is somewhat of a triangular shape, of which the two sides already traced are tolerably straight, while the third one is somewhat curved. In returning from the eastern extremity along this curved boundary, we come to a coal-house and a smith's shop, similar to those in the western range of buildings, and more contiguous to the vessels in the eastern part of the yard. Farther on are the buildings occupied by the boat-builders and the ship-joiners. In various parts of the space between the ships and the northern boundary of the yard are buildings devoted to several different purposes. One is the mastmaker's shop, a large building where masts, yards, bowsprits, &c. are made. A second is a steaming-house, where planks are steamed



preparatory to being laid outside the timbers of a ship; the steaming is effected in square wooden trunks, about thirty feet long, provided with iron doors at one end, which are lifted up by balance weights, and on the opening of which planks are slid into the trunks, to be afterwards exposed to the action of steam. A third building contains a range of saw-pits, similar in arrangement and in purpose to those already mentioned. The open spaces between these several buildings are occupied with heaps of wood—here trees waiting to be squared—there prepared timbers ready for the shipwrights—at another place planks and deals—and at another several thousand trenails placed on a stage to get seasoned. We wander between and among those heaps of wood, and at length arrive at the entrance from whence we started, having visited in our journey pretty nearly all the different parts of the yard.

Thus far have we endeavoured to convey to the reader an idea of the mode in which a large ship-building establishment is arranged. But we hope to be able to do something more than this. We propose to follow, in a cursory and popular manner, the routine of processes by which a large ship is built, so far as to show the relative dependence of one department on another. The art of ship-building involves some of the most intricate considerations which any of our manufacturing arts present; and therefore anything like an exposition of its mathematical principles is wholly foreign to our present object, which is to give a few plain details that a plain man may understand.

In the first place, then, let us suppose that a merchant orders a ship, intended for a particular line and kind of traffic, to be built by a ship-builder. The mode of measurement, by which an agreement is made between the parties, is rather singular, and is by no means easily understood by those who are not familiar with the general details of shipping. It is by *tonnage*, and is supposed to represent the number of tons of cargo which the proposed vessel will carry. Tonnage is estimated sometimes by bulk, but more generally by weight; a ton by bulk being equal to forty cubic feet; and a ton by weight equalling twenty cwts. There are certain formulæ employed by ship-builders, whereby the tonnage is calculated from the length, breadth, and depth of the vessel; but these formulæ seldom give the real tonnage, that is, the real amount of cargo which the vessel will carry; because two vessels exactly equal in length, breadth, and depth—measured as those dimensions usually are—may have very different internal capacity, owing to different curvatures of the hull. A ship will sometimes carry more cargo than her 'tonnage' indicates; sometimes less; and therefore the word tonnage is to be regarded only as a rough approximation to the burden which the vessel will carry.

Still, however, the 'tonnage' is always one of the items of agreement between the builder and the owner, partly from the circumstance that when a vessel is registered, the tonnage is made to indicate its rank or class. In addition to this, the dimensions of the vessel about to be built are agreed upon, as well as the thickness and quality of the more important timbers, the thickness of the planks laid on the outside of the timbers, and other details of a more minute kind.

The specification of the vessel being thus drawn up, the ship-draughtsman commences his labours, which are of a parallel nature to those of an architect in common building. He prepares drawings of the vessel in various points of view, so as to represent the dimensions not only of the vessel itself, but also of the principal timbers composing it, and also the curvatures of those timbers.

The draughtsman having prepared these working drawings, generally on a scale of about a quarter of an inch to the foot, the next thing is to prepare a working *mould* of the ship, as large as the ship itself, in the mould-loft. The mould-loft floor is in most instances large enough to receive half the length of the intended vessel, with the whole height; and on this floor the draughtsman chalks a large number of lines, derived from the working drawings, but enlarged to the full dimensions of the vessel. These lines, generally speaking, represent the exact dimensions and curvatures of the timbers required to form the vessel; and when all the lines necessary for one-half the length of the vessel are laid down, say the bow end, another series is then laid down, on the same floor, for the stern end; the two series intersecting and mingling among each other in every part. Practice enables the draughtsman to distinguish one series from the other, and thus obviate the necessity of having a mould-loft floor equal to the length of a large ship. When these lines, which amount to a large number, and present nothing but a confused assemblage to the eye of a stranger, are laid down, thin pieces of American deal, about three-quarters of

an inch in thickness, are cut and adjusted to the curvatures of the lines, different pieces being joined end to end to produce the requisite lengths. These pieces of deal, which are called *moulds*, assist the sawyers in cutting the oak to the required sizes and curvatures for the different timbers of a ship; and there are certain marks on each piece which further this object. Let us suppose that one of the curved timbers is to be twelve feet in length, one foot thick, one foot wide, and so tortuous in form that its curvature is not circular, and none of its angles are right angles: in such case the piece of pine which forms the mould will give the curvature of the timber, while certain marks on its surface indicate the places where bevellings and angles are to be made from directions given on another board. On these principles the construction of the moulds proceeds, until a sufficient number of pieces is prepared to guide the sawyer in cutting all the timbers of the ship. For a large East Indiaman the number of moulding-pieces thus required is more than a hundred, each of which is marked and numbered in various ways.

The mould of the ship being thus prepared, the next operation is to cut up the oak and elm trunks to the proper dimensions for the various parts of the ship. This is called 'converting,' and is a process requiring great art and judgment: for the wood must be selected not only with a view to avoid waste, but also that the grain of the wood, in preparing a curved timber, may be cut crosswise as little as possible, since such a mode of cutting would greatly weaken the timber. It is, therefore, desirable that a crooked trunk be selected for preparing a curved timber, and that the crookedness of the one correspond as nearly as may be with the curvature of the other. The superintendence of this department is in a person possessing much experience and knowledge of the quality of different woods, and of their relative fitness for the several timbers of a ship. When this superintendant or 'converter' has selected the proper wood, the operation of sawing proceeds nearly as in a common saw-pit. The trunk of the tree is laid across a frame-work in the usual manner, and two men, one above and the other below, cut the wood by means of a long saw. The thin deal mould is used as a constant guide in cutting: the curvature, the breadth, the thickness, and the angles, all being regulated either by the mould itself or by the marks and directions chalked or painted on it. In a place where so much timber is used as in a ship-building yard, it might at first thought be imagined that machine-worked saws would be used; but the curvatures and angles of the timbers are so extremely varied, not only in different timbers, but also in different parts of the same timber, that the precision and regularity of machinery would be here thrown away, and indeed unavailable.

So far, then, we may suppose the principal timbers to be cut. This operation is effected in saw-pits covered by sheds, of which there are three in various parts of the yard to which our attention has been directed. As the timbers are wanted, they are conveyed to the building-slip, or that spot of ground on which the construction of the ship takes place. When the timbers are thus removed, they pass from the control of the 'converter' to that of another superintendant or foreman, who is the ship-builder or shipwright properly so-called.

The building-slip is prepared for the operations in the following manner:—The ground having been cleared and made tolerably clean, a row of blocks is laid down from end to end of the slip, the length of the blocks being transverse to or across the slip. The blocks are of oak, placed one upon another, to the height of three or four feet, and secured together. These piles of blocks are ranged along the slip, at distances of about five or six feet apart, and the upper surfaces of all the blocks are so adjusted that they shall be in one straight line, but inclining slightly downwards towards the river, the inclination being about five-eighths of an inch to a foot of length. Great care is taken in laying down these blocks, as they form the support,—the work-bench, in fact,—on which the whole ship is afterwards built, the keel being laid down immediately upon the blocks.

In order to understand the succession in which the parts of a ship are put together, it is useful to notice certain points of comparison between a ship and the human skeleton. The keel is the back-bone of a ship, and the frame-timbers are the ribs; the ribs forming an arched exterior to the whole of the body or hull, and the keel forming the longitudinal column to which the ribs or timbers are attached. The keel is, therefore, the principal part of the vessel, and the one above all others whose strength and security are indispensable to the safety of the vessel. From this circumstance, and from the position of the keel at the lowest part of the vessel, it constitutes the first part of a ship laid down on the slip. The keel is made of elm, and is of such length, except in small vessels, that no single tree will form it; and, therefore, two or more pieces are joined together, or, as it is termed, *scarfed*, end to end, until the required length is produced. This scarfing is a kind of overlapping, the under part of one piece and the upper part of the other, or the right side of one and the left side of the other, being cut away near the ends, and the cut or scarfed surfaces bolted together. For an East Indiaman of a thousand tons burden, such as the Agincourt and the Southampton, of which we before spoke, the keel is about a hundred and forty feet long, fourteen inches wide, and fifteen deep. For a steamer of the same burden the length is several feet greater, since steamers are generally longer and narrower than sailing vessels of equal burden.

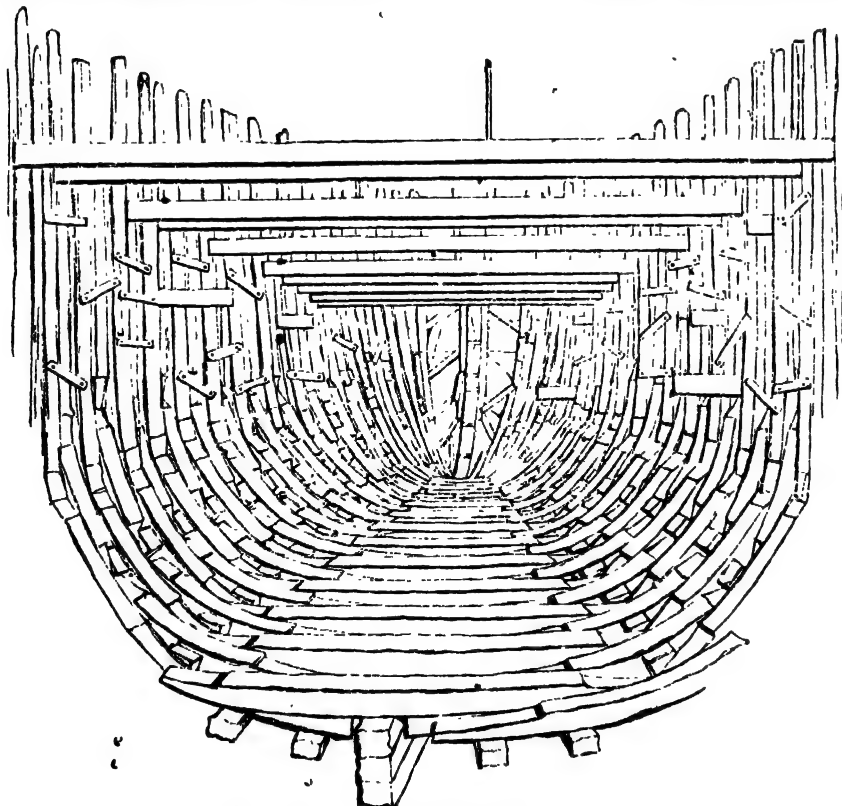
The sides and the ends of the keel are grooved and cut in various ways, to receive the different timbers and pieces of wood forming the hull of the vessel. Of these timbers two, which form the main supports of the two ends of the vessel, are the *stem* and the *sternpost*, of which the former curves upwards from the higher end of the keel, and the latter rises almost perpendicularly from the lower end (for a ship is built with the stern-end towards the river, and is consequently launched stern foremost). Both are formed of oak, and are attached to the ends of the keel in a very substantial manner. To the sternpost are attached various pieces of wood, called transoms, fashion-pieces, &c., the contour of which, when fixed in their places, is such as to give the elegantly-curved form to the hinder part of the vessel; while to the stem are attached various pieces, some of which fit it more securely to the keel, some serve to connect it with the timbers and planks afterwards to form the sides of the vessel, and others form a receptacle or support for the end of the bowsprit. The heavy pieces of timber erected thus on the two ends of the keel are hauled up to their proper positions by pulleys and tackle, and then shored up by poles from the ground, to prevent them from sinking.

Along the keel, nearly from end to end, are fixed stout timbers, called *floor-timbers*, at right angles with the length of the keel, and slightly concave on their upper surface. They are placed a few inches apart, and constitute, as the name imports, the floor of the ship. As there is a general upward curvature of the ship towards each end, the floor rises in a similar manner, and would thus leave a vacancy between the end floor-timbers and the keel; but this vacancy is

filled up with solid wood, called *dead-wood*, constituting a firm foundation. The floor-timbers may be regarded as the lower part of the ribs of the ship; and above them spring up the various pieces forming the remainder or vertical parts of the ribs. No wood can be found so large, so curved, or so strong as to form the whole curved rib; and, therefore, each rib is built up of separate pieces, the general name of which is *futtocks;* thus we have the first, second, third, and perhaps fourth futtock, each being a distinct piece of timber, but all collectively forming one rib, or one 'frame of timbers.' These pieces are placed, some end to end, and others side to side, in such a manner that the joint of two ends of timber may have a support of solid timber at its side. Various means are adopted for joining the pieces end to end, but those which are placed side by side are bolted together with bolts.

As the various futtocks curve more and more upwards, till the upper one, or 'top timber,' reaches to the top of the hull of the ship, it must be evident that all the pieces forming one rib or 'frame of timbers' are very ponderous, especially if the vessel be large. The arrangements, therefore, are regulated according to the dimensions of the vessel. If it be large, the pieces, after being fitted together on the ground, are raised up singly, or perhaps two bolted together; but if it be small, three or four pieces may be bolted together on the ground, and raised as one piece. But in whatever way this part of the matter be arranged, the other operations are nearly alike. All the pieces to form one rib are adjusted and fitted to each other on the ground, and are lifted from the ground by strong tackle. The curvature and weight of the pieces is such, that after being raised and adjusted to their places, they must be secured from falling either inwards or outwards; for the former of which purposes planks called *cross-spalls* are nailed to the upper ends of the timbers, at right angles to the keel, and stretching across from one side to the other; and for the latter, planks called *rib-bands* are placed nearly horizontal round the outside of the ribs at various heights, and are shored up by poles fixed in the ground beneath.

In this manner the ribs or frames of timbers are raised one after another, from end to end of the vessel, the two halves of each frame, that is, the two parts springing from opposite sides of the keel, being raised nearly at the same time, so as to maintain the top timbers at the proper breadth across the vessel. In this stage of the proceedings, the interior shell of the vessel presents the appearance represented in our concluding cut. We have given an *interior* sketch, because it shows more clearly the relative position of the parts. At the bottom, just above the keel, are the floor timbers, ranged at right angles to it, and projecting some distance beyond it on either side. At the ends of these timbers are the various pieces or futtocks forming the ribs, jointed and bolted together at different parts of their heights. The ribs rise to different and irregular heights, afterwards to be adjusted; and across, from the upper part of the timbers on one side to the upper part on the other, are the spalls, the temporary wooden braces which keep the opposite sides at their proper distances.



[Frame-Timbers of a West India Trader (400 tons).]

But six o'clock has arrived, and our "day' is ended. All are leaving their work. The shipwrights, the mast-makers, the boat-builders, the joiners, the smiths, the caulkers, the trenail-makers, the oakum-spinners—all have finished their day's labour, and the busy hum of active industry is about to be stilled. One day is too short for the building of our ship. We will therefore leave the rough frame-work, the skeleton, the assemblage of back-bone and ribs, for the present: and will on a future occasion invite the reader to spend with us a second "day at a ship-yard."



[The Martyrdom of St. Sebastian.—Guido.]

GRATUITOUS EXHIBITIONS OF PICTURES.

DULWICH COLLEGE

One of the greatest difficulties with which the practice of the art of painting is surrounded, and therefore one of those which when overcome shows that an artist has attained to excellence in a great quality of his profession, is the true delineation of expression. The importance of this quality is too obvious to be insisted on at any length, since it is only by the appropriateness of expression to the situations in which the objects depicted are placed, that we can feel assured that the interest of the beholder will be duly aroused to the full appreciation of the subject before him.

The greatest artists since the revival of painting are those who most successfully delineated expression. Leonardo da Vinci, in his celebrated Last Supper,* in the Refectory of the Dominican Convent at Milan—Michael Angelo, in his immortal works in the Sistine Chapel—Raffaelle, in his Cartoons at Hampton Court, and in his Transfiguration, are, amongst others, instances of this truth; and so far as the head of his present subject is concerned, Guido Reni may be enumerated in the same list. Although we have there placed him, it must be remembered that he is usually held to be an artist ranking high only among the second class of painters, and indeed we carefully limit our admiration, generally speaking, of his power of depicting expression to that which is shown in his heads, although, as we shall hereafter proceed to point out, there are other parts of the subject above, engraved by Mr. Jackson, in which he has been no less successful in infusing a sense of that quality.

Before commenting on that work, we will give a short history of the painter. Guido Reni was born at Bologna in the year 1574. He was the son of a pro-

fessor of music, and had made some progress in the study of that science when he turned his attention to painting. He became a scholar of Denis Calvert, under whom his progress was so rapid that his master, after slightly retouching his pictures, disposed of them as his own. At twenty years of age he quitted the school of Calvert to enter that of the Caracci, in which he became the favourite pupil of Ludovico. He had already given proof of his ability in some performances in the Palazzo Bonfigliuoli, where some pictures of Michael Angelo Caravaggio excited his notice, and their vigorous opposition of light and dark astonished and pleased him. Guido, for a time, adopted the same principle, but the remonstrances of the Caracci induced him to abandon it. Instead of the contrasts of Caravaggio, he gave to his pictures the breadth and clearness of open day-light; tenderness and suavity were made to take the place of that which the Caracci did not scruple to designate as crudeness and violence of tone. Still the aspiring painter had not overcome all his difficulties, for no sooner did he show that he was able to carry into practical effect the precepts of his instructors, than they upbraided him with presumption for endeavouring to found a new style of art. Expelled from their academy, he soon became their rival as an artist, and though wounded in vanity by their sarcasms, he could not forget the debt of gratitude that was due to them for their able instruction. On visiting Rome, he renewed his acquaintance with Annibale, then employed in the Farnese Gallery, but their friendship did not long continue. A jealousy of his ability seems to have estranged the good feelings of all his brother artists, for we find that Albano, Caravaggio, and all the three Caracci were bitter in their animosity against him. Pope Paul V., however, and the Cardinal Borghese, engaged him to paint important subjects, and his pictures soon decorated the walls of the Sampieri, the Rospigliosi, the Campidogli, the Spada, the Barberini, and other palaces. He returned to his native city, disgusted by the intrigues of Rome, having executed works for the church of St. Ambrogio at Genoa and for the cathedral of Modena. A fatal habit of gaming, in which Reni indulged, dissipated all his gains, and he struggled in vain against its infatuating influence. He died of a fever said to have been brought on by anxiety of mind, at the age of sixty-eight years.

The Martyrdom of St. Sebastian is one of the most powerful pictures, both in regard to expression and in respect of strong contrast, that is to be met with in English collections, and would appear to have been executed at the period when Guido had adopted the style of Caravaggio. St. Sebastian is represented having received an arrow in the body, which still quivers in the living flesh. The arms are tightly bound behind the back, whilst the head is thrown back with a powerful expression of bodily pain. The face presents to us all the usual characteristics of Reni's style—a mixture of mental anguish and corporeal agony. His heads of the crucified Redeemer, and of the Virgin Mary, are all of this class; but, generally speaking, with that, and a careful yet easy drawing of the drapery, their claims to admiration end. In the St. Sebastian, on the contrary, the whole figure is as expressive as the head. The contraction of the muscles of the body denotes that the arrow has but just inflicted its wound, and the general action of the upper part of the figure, the projection of the shoulders, and the heaving expansion of the chest, denote that the body and the spirit of the saint are alike impatient for a release from earthly bondage. Of the executive part of this picture, namely, the handling, it will not fail to be observed that it is more free, and the touch more firm, and that the drawing is in every respect more bold than are usually observable in this artist's works. These are the qualities which have recommended this performance to our notice as of a higher class than others by his hand. Correctness of design we usually find, and mostly accuracy of anatomical detail, but his labours rather please us for their grace and elegance of contour, than for vigorous conception or powerful execution. His figures of men frequently want strength, though those of his women generally enchant by the softness and delicacy of their forms. The criticism of Mr. Fuseli is peculiarly apt, though the work under notice must form an exception to it. "His attitudes," observes that acute critic, "seldom elevate themselves to the fine expression and peaceful simplicity of the face: the grace of Guido is the grace of the theatre; the mode, not the motive, determines the action: his Magdalens weep to be seen, his Hero throws herself over Leander, Herodias holds the head of her victim, his Lucretias stab themselves, with the studied airs and ambitious postures of buskined heroines: it would, however, be unjust not to allow there are exceptions from this affectation in his works." The St. Sebastian of the Bourgeois collection is exactly one of those which the excellent Fuseli would have held to be exempt from the affectation of which he complains. The head possesses all that can be desired of expression, and the body harmonises exactly with that expression, both in attitude and in anatomical drawing.

In every point of view we are disposed to consider this work as one of high art; for it does not depend on the number of figures introduced into a picture whether it holds that place or not. The subject is grand and impressive: it delineates it in true bodily suffering, but the feeling engendered is not that of disgust, because the object for which that representation is made, or at least its effect, is to recall to our minds the constancy of the martyr, whilst we sympathise with the agony of the man.

THE VALUE OF A BONE.

THAT "nothing is lost," is a truth which becomes more and more evident to us in proportion as our knowledge of natural phenomena increases; but it is perhaps still more important, in a practical point of view, to observe that "nothing is valueless." To illustrate this remark, we might select from an abundance of instances; but perhaps we could not select a more familiar example than a *bone*, an object which is too often regarded as valueless.

Unless the bone which once formed the nucleus of a joint of meat be actually burned, we may rest assured that it will be applied to more useful purposes; for if it be consigned to the dust-heap, it is afterwards separated from other refuse by the dust-contractor; if it be thrown into the street, there are itinerant collectors who will deem it not unworthy of a place in their all-devouring bag; or if it be sold with others, at the rate of so much per peck, to the dealer in "marine stores," it is afterwards sold at a profit to other parties. A London Directory furnishes us with the names of more than a dozen "bone-dealers," that is, persons whose avocation is to purchase bones, principally from the small dealers just alluded to, and, in most cases, to boil or crush them, preparatory to the employment of the bones in some useful manner. We will take a brief glance at a few of these uses.

In the first place, bones may be made to yield nutriment; Papin, Boyle, D'Arcet, and others, having obtained a gelatinous kind of soup from bones by various processes. Papin used a vessel called a digester, consisting of a boiler closed everywhere except a small hole in the top, which was loaded with a safety-valve.

In this vessel water was made to boil at a much higher temperature than under ordinary circumstances; and the valve was so regulated as to open and allow the steam to flow out when the pressure had attained such a point as to endanger the safety of the vessel. When crushed bones were boiled in this vessel at a high temperature, a quantity of gelatine was extracted from them, sufficient to form a jelly when cold. Mr. Boyle obtained a curious kind of food from bones: he placed a cow-heel, without water, in a perfectly close vessel, and exposed it to a moderate heat for four hours, at the end of which time he found the entire bone so thoroughly softened, that he could cut it with a knife and eat it; thus proving, as it would appear, that the softer parts of the bone furnished moisture by which the harder parts became edible. Mr. Aikin caused the leg-bone of an ox to be sawed longitudinally and boiled for three or four hours, at the end of which time the whole of the fat and mucus, and some of the jelly, had been extracted; but the cellular parts of the bone remained, even after another long boiling, nearly full of gelatinous substance; thus showing that the ordinary heat of boiling-water is not sufficient to obtain all the gelatine from the bone. The knowledge of the fact that much gelatine exists in bone, that it cannot all be extracted by boiling-water at the ordinary temperature, but that it may be extracted at a higher temperature, led to the adoption of Papin's mode of preparing bone-soup in some of the hospitals and military head-quarters of France; and memoirs have been written in advocacy of the collecting of bones as an article of food for a besieged garrison. Admitting, however, that in cases of extremity soups thus obtained may be most valuable, yet it is stated that a very unpleasant *burnt* flavour invariably accompanies such soup. Another plan has therefore been suggested and put into operation, which is as follows:—The bones, having been boiled for some hours to extract the fat, are placed in very dilute muriatic acid, by which the earthy basis of the bone is gradually dissolved, leaving the cartilage and much of the gelatine in the form of a flexible semi-transparent substance retaining the original shape of the bone. These masses are thoroughly washed, to free them from the acid and the earthy particles; then dried, and kept in bags for use. When required for preparing soup, a portion of this cartilaginous substance is boiled in forty times its weight of water, whereby it becomes completely dissolved. The solution on cooling forms a jelly, which by subsequent evaporation is thickened, and is then preserved as portable soup. This soup, by re-dissolving and seasoning, becomes an article of food. Such are the modes in which scientific men have proposed to extract nutriment from bones. So long as a nation maintains a state of tolerable prosperity, it is not probable that such plans will be acted on to any great extent; but in times of scarcity or distress, both bone-soup and sawdust-bread may possibly be found worthy of a thought.

In the next place, bones form a most valuable manure. The period is not very remote when this kind of manure was almost unknown; but by a careful observation of the effects which they produce when judiciously employed, their value on poor and dry soils has become so important, that not only are shiploads sent from London to the eastern parts of England, but cargoes are also imported from Germany, Belgium, and Holland. After the bones have been collected in London and other large towns, they are picked; and the best having been selected for purposes of which we shall presently speak, the remainder are either crushed by the dealers, or are shipped off at once to Hull and other towns near the agricultural districts, undergoing a partial decomposition on the voyage, which probably facilitates their subsequent crushing. The crushing-mill consists of two iron cylinders, grooved round the circumference, the projections being cut into the form of teeth: these cylinders turn upon one another by means of machinery, so that the teeth of one run into the grooves between the teeth of the other; and the bones, being allowed to fall upon their surfaces, are drawn in between them and crushed. The bones are crushed to three different sizes for different purposes, and are known as "inch bones," "half-inch bones," and "dust bones." They are used principally as a top-dressing to grass-land, or are drilled with turnip-seed.

Bone, as a substitute for wood, having more hardness than that substance, and less brittleness than stone, is very valuable in the arts. The spinous bones in the back, fins, and tails of many fishes, and the serrated teeth of sharks, furnish examples of the mode in which rude nations avail themselves of such a substance for the fabrication of offensive weapons, such as arrows, darts, and spears.

The extent to which the finer kinds of bone, such as the teeth or tusks of the elephant, the hippopotamus, the walrus, the narwahl, &c., have been employed for ornamental purposes, is known to most persons:—sometimes carved or sculptured into tasteful forms; sometimes turned in a lathe; sometimes used in sheets to cover colossal statues; and at other times as an inlaying material. Ivory and the analogous kinds of bone were very largely employed by the ancients. In modern times, and in this country, purposes of utility rather than of ornament are sought to be obtained from bone. Tooth and nail brushes, handles of knives, combs, paper-knives, and a variety of small objects are turned in the lathe, or are fashioned by means of other tools, out of ivory and bone; the former being the more costly, but the latter the more useful of the two, all things considered.

The circumstance that bone will yield a considerable portion of gelatinous matter when boiled, has led to the useful employment even of the merest shavings resulting from the production of manufactured articles. The scrapings, shavings, and sawdust of bones are used by pastrycooks as a material for jelly, which it yields the more readily on account of the attenuated state to which it is reduced. The jelly thus produced is said to be nearly as good as calf's-foot jelly; and the shavings, when dry, have this advantage over calf's-foot, that they may be kept for a long time without any deterioration of quality. The shavings of bone are also usefully employed in case-hardening steel.

By the combustion of bones in close vessels, various chemical products are obtained, by the decomposition of the component parts. Ammonia results from the hydrogen and the nitrogen contained in the bones; and when the other gaseous elements are removed by peculiar means, there results an earthy residue, which is then called animal charcoal. When this charcoal is obtained from bone, it goes by the name of bone-black, and when from ivory, ivory-black; the difference between the two kinds being a rather finer texture and colour in the latter. Ivory-black is used as a pigment or colouring substance by artists; and bone-black is a very valuable bleaching or clarifying ingredient, in the refining of sugar.

Even the bone-ash, which results when every other part is burnt away, has many valuable ingredients. Ground to fine powder, it is employed as a material for making cupels for gold and silver assayers; when washed and cleansed, it forms a useful polishing-powder; when treated in a certain manner, it yields phosphorus.

It will thus be seen that a bone may be applied to a very large range of useful purposes. All must acknowledge, therefore, that the "value of a bone" is by no means inconsiderable.



[Threshing by the Sledge.]

MODES OF THRESHING CORN IN THE EAST.

Besides the usual effects of climate on the wild as well as cultivated productions of different countries, its influence is of course very important on all the ordinary branches of agricultural industry. Those who are engaged in such pursuits cannot fail to be interested in studying the different modes by which all accomplish the same ultimate end, whatever may be the diversities of soil and climate; and this kind of knowledge may not unfrequently prove useful to the practical farmer, by affording hints which he may turn to profitable account. The most careless observer may draw some inferences, of wider and more extensive signification than might be first imagined, by attentively considering the causes which have given rise to modifications in those practices of husbandry to which he has been accustomed. In a country which has not yet been settled, it is said—with some little degree of exaggeration, perhaps—that it is cheaper to rear a herd of cattle than a brood of chickens, for the one picks up a subsistence with scarcely any labour on the part of the owner, while the latter must be fed with the produce of cultivated land; and so simple a fact as this, if pursued to its causes, will unfold not a few of the circumstances which constitute the difference between a country that has been fully peopled for ages, and one in which the virgin soil was only stirred yesterday. We may take another example of the value of noticing not only *differences* but their *causes*:—The traveller who passes through the countries of the northern and north-eastern parts of Europe will be apt to ascribe to them the possession of greater wealth than they really enjoy. The farm-houses are surrounded with extensive outbuildings, which to an untravelled native of England appear to be only the result of capital accumulated in a form calculated to ensure a large proportion of physical comfort. But the climate renders it necessary to provide buildings to contain all the live-stock, and all the hay, corn, and provender for their support during a considerable portion of the year. Besides the house occupied by the owner of the land, it is surrounded by the cottages of his labourers, ranges of barns, stables, cowhouses, sheephouses, granaries, cartsheds, stables, and harness-rooms, to an extent, according to Mr. Jacob, " more than five times as great as would be required in England for the same extent of land." The climate of this country is neither so rigorous as to prevent live-stock continuing in the open air throughout the winter, nor to prevent green food remaining on the land for them while this season lasts; and thus there is a saving in the erection of outbuildings which the agriculturist in the more northern parts of Europe finds it necessary to provide. As our account of the modes of threshing adopted in the East will be short, the preceding remarks may, perhaps, be pardoned.

In Syria, Palestine, Western Asia generally, and various other parts of the world, the threshing-floor is in the open air, and is such a level and hard piece of ground as can be found nearest the harvest-field. If on the top of a hill, it is preferred, for the advantage of the subsequent winnowing. For use as the regular threshing-floor of the estate, this spot is often prepared by the removal of about six inches deep of the soil, and filling up the vacancy with a firm compost made of cow-dung and clay. Such threshing-floors were common almost everywhere, being only covered in those countries where showers are frequent in the time of harvest.

In such floors the separation of the grain from the straw was effected by the different processes which remain to be described. 1. By the treading of cattle.—This appears to have been the most ancient practice for the larger grains, of wheat, barley, and rye. It is in fact the only process of threshing to which allusion is made in the books of Moses, as in the precept, "Thou shalt not muzzle the ox that *treadeth out* the corn," an injunction conformable to the existing practice of all the nations of the East, none of whom, whatever be the mode of threshing, muzzle the animals which labour in it. Threshing by the feet of cattle was also the practice in ancient Egypt. Homer mentions no other mode of threshing than by driving oxen over the corn. He compares the slaughter made by the horses and chariot of Achilles to the beating out of grain by the trampling of oxen. It was also one of the modes in use among the Romans. Among them, however, horses were preferred to oxen for this work, and there can be no doubt of their superior adaptation to it; but the Hebrews for many ages had no horses, and when they had, did not soon learn to employ them in any agricultural labour. Neither did the Egyptians. But horses appear to have been employed for threshing in the time of Isaiah.

At the present time the custom of threshing by the

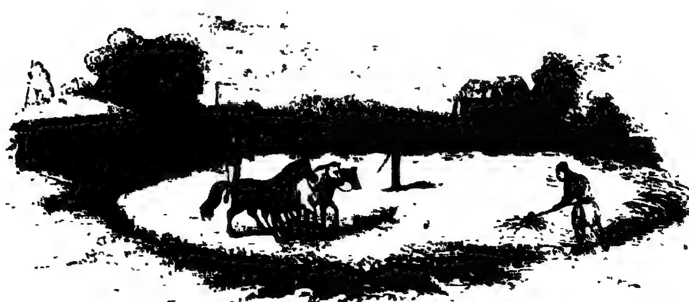
treading of animals is common in Northern Africa and several parts of the East; but horses are more employed than oxen. In this case a strong post is planted in the centre of the threshing-floor, with a moveable wooden ring at top, through which passes the cord that yokes the animals, and which can be lengthened or shortened at pleasure, so as to make them move round in a wider or narrower compass. So Shaw, in describing the practice of the Moors and Arabs of Barbary, states: "These nations continue to tread out their corn after the primitive custom of the East. Instead of beeves, they frequently make use of mules and horses, by tying, in like manner, by the neck, three or four of them together, and whipping them afterwards round about the *nedders*, as they call the threshing-floors, where the sheaves lie open and expanded, in the same manner as they are placed and prepared by us for threshing. This, indeed, is a much quicker way than ours, though less cleanly; for as it is performed in the open air, upon any round level plot of ground daubed over with cow-dung to prevent as much as possible the earth, sand, or gravel from rising, a great quantity of these, notwithstanding this precaution, must be unavoidably taken up with the grain. At the same time the straw, which has been taken notice of as their chief and only fodder, is hereby shattered to pieces, a circumstance very pertinently alluded to in 2 Kings, xiii. 7, where the King of Syria is said to have made the Israelites 'like the dust by threshing.'"

2. Another kind of threshing is by the *drag*, being a strong frame of planks, or a large block of wood, armed and roughened at the bottom with flints or pieces of iron, and drawn by oxen, mules, or horses over the corn-sheaves spread on the floor, the driver sitting upon it when its form allowed him to do so. This corresponds with the notice which Varro takes of the *tribulum*, and he says that when the driver did not sit on the machine, a weight was placed upon it. This very simple machine is evidently that which Laborde saw actually in use in Syria, and of which he gives the representation which we have copied in the preceding engraving. A corn-drag, somewhat less rude than this, is now generally used in Syria and Asia Minor. A figure of it is given in the recent work on that country by Mr. Fellowes, who describes it as designed for the joint purpose of threshing and of cutting the straw: "It is very primitive and curious, consisting of a thick plank of timber, flat on the ground, with another smaller one inclining upwards, to which the animal is attached for the purpose of dragging it over the corn, which is spread out on the hard rocky ground; the flat under-side is stuck full of flints or hard cutting stones, arranged in the form of the palate or rough tongue of the cow. The roller is the trunk of a tree, often weighted by the driver riding on it. It is dragged over the ground, but does not revolve." Dr. Wilde, who travelled in Palestine too early to see the act of threshing, notices a similar machine which he saw in a vaulted granary near Tyre. Both these travellers identify this, very rightly, with the threshing instrument mentioned by Isaiah, xli. 15, and the *tribulum* of Virgil.



[Threshing by the Drag.]

3. A third mode of threshing was by what is called in Scripture "the wain," more properly "*the sledge*," and which is still employed in Egypt and some parts of Western Asia. This sledge is fixed upon two or three wooden rollers, armed with several iron rings, with serrated edges, so sharp as to cut the straw. This machine, which is drawn by oxen, mules, or asses, is easily driven by a man seated on the sledge, and as it passes round in a circle over the corn spread beneath, the grain, by repeated operation, is trodden out, while the straw is chopped by the iron rings. This corresponds to a variety of the *tribulum* mentioned by Varro,



[Threshing by Horses.]

and which he described as "a plank with little rollers in place of teeth." He adds, "In Hither Spain (*Hispania Citerior*) and other places, a man sits upon this machine, and drives the cattle that draw it." He says this was called the *plostellum Pœnicum*, or Carthaginian wain; and as the Carthaginians, doubtless, derived it from their Phœnician or Canaanitish ancestors, a very proximate origin is found for it. It was undoubtedly in use among the Jews.

4. The *flail* is and has been only used in ancient times, and still in Eastern parts, with grains of those sorts in which the ears only are reaped, or when the separation of the grain from the ear is the sole object desired. We find from the Scriptures,* that the flail was confined, among the ancient Hebrews, to the threshing of the smaller grains, such as vetches, dill, or cummin, in which no operation upon the stalk was desired. The passage of Scripture to which we have just referred contains distinct allusions to *all* the processes of threshing which have been described, and may here be adduced, as given in the improved translation of Bishop Lowth:—

"The dill is not beaten out with *the corn drag;*
Nor is the *wheel of the wain* made to turn upon the cummin.
But the dill is beaten out with *the staff;*
And the cummin with *the flail:* but
The bread-corn with the *threshing wain:*
And not for ever will he continue thus to thresh it;
Nor to vex it with the wheel of his wain;
Nor to bruise it with *the hoofs of his cattle.*"

It is seen how clearly the preceding statements apply to and illustrate this interesting passage of Scripture.

* Isaiah, xxviii. 27, 28.

LOCAL MEMORIES OF GREAT MEN.

Petrarch.

[Concluded from page 207.]

Petrarch's passion, however, continuing not merely unabated from the hour of their first meeting, but growing in intensity, he sought more than once to relieve his mind by travel: but, as his biographer happily observes, he always returned, "like the moth to the candle" that consumed him. In 1336 he went to that beautiful valley which had never ceased to haunt his mind with the remembrance of its loveliness from the hour when, as a boy, he first saw it, and there bought a little cottage and an adjoining field. Vaucluse, or Vallis Clusa (the shut-up valley), is watered by the windings of the river Sorgue, along one side of which extend verdant plains, and along the other corn-fields and vineyards. It terminates in a stupendous semicircle of rocks, rising perpendicularly upwards, and having at the foot of one of them an immense cavern. Within this rises the Sorgue. Petrarch has himself given us a most interesting account of his modes of life here, and of some of the principal features of the place. "Here," he says, "I make war upon my senses, and treat them as my enemies. My eyes, which have drawn me into a thousand difficulties, see no longer either gold or precious stones, or ivory, or purple; they behold nothing save the water, the firmament, and the rocks. The only female who comes within their sight is a swarthy old woman, dry and parched as the Libyan deserts. My ears are no longer courted by those harmonious instruments and voices which have so often transported my soul: they hear nothing but the lowing of cattle, the bleating of sheep, the warbling of birds, and the murmurs of the river. I keep silence from morn till night. There is no one to converse with; for the good people employed in spreading their nets, or tending their vines and orchards, are no great adepts at conversation. I often content myself with the brown bread of the fisherman, and even eat it with pleasure. Nay, I almost prefer it to white bread. . . . But still I have my luxuries,—figs, raisins, nuts, and almonds. I am fond of the fish with which this stream abounds, and I sometimes amuse myself with spreading the nets. As to my dress, there is an entire change; you would take me for a labourer or a shepherd. My mansion resembles that of Cato or Fabricius. My whole house-establishment consists of myself, my old fisherman and his wife, and a dog. My fisherman's cottage is contiguous to mine; when I want him, I call; when I no longer need him, he returns to his cottage. . . . . One of these two gardens (made by himself) is shady formed for contemplation, and sacred to Apollo. It overhangs the source of the river, and is terminated by rocks and by places accessible only to birds. The other is nearer my cottage, of an aspect less severe, and devoted to Bacchus; and, what is extremely singular, it is in the midst of a rapid river. The approach to it is over a bridge of rocks, and there is a natural grotto under the rocks, which gives them the appearance of a mystic bridge. Into this grotto the rays of the sun never penetrate. . . . . Hither I retreat during the noontide hours; my mornings are engaged upon the hills, or in the garden sacred to Apollo." In this wildly beautiful solitude, Petrarch meditated or wrote his most important compositions, among others his gigantic undertaking, the 'History of Rome,' from Romulus down to Vespasian, which he did not live to finish.

In spite of the closeness of his literary application, he was too near to Avignon, and the solitude was too complete to allow him to forget Laura. He met her one day in the streets of the former place, when she said unto him, "Petrarch, you are tired of loving me." This incident produced the following sonnet:—

"Tired, did you say, of loving you? Oh, no!
I ne'er shall tire of the unwearying flame.
But I am weary, kind and cruel dame,
With tears that uselessly and ceaseless flow.
Scorning myself, and scorn'd by you, I long
For death: but let no gravestone hold in view
Our names conjoin'd; nor tell my passion strong
Upon the dust that glow'd through life for you.
And yet this heart of amorous faith demands,
Deserves, a better boon; but cruel, hard
As is my fortune, I will bless Love's bands
For ever, if you give me this reward."

This was about 1339. Eight years later, when he was about to quit the neighbourhood, he went to take leave of her. "She was seated," he says, "among those ladies who are generally her companions, and appeared like a beautiful rose surrounded with flowers smaller and less blooming. Her air was more touching than usual. She was dressed perfectly plain, and without pearls or garlands or any gay colour. Though she was not melancholy, she did not appear to have her wonted cheerfulness, but was serious and thoughtful. She did not sing as usual, nor speak with that voice which used to charm every one. She had the air of a person who fears an evil not yet arrived." This was their last meeting. In the terrible plague which desolated Italy, Laura was smitten and died. In the margin of his copy of Virgil, Petrarch wrote, on hearing the news:—"Laura, illustrious for her virtues, and for a long time celebrated in my verses, for the first time appeared to my eyes on the 6th of April, 1327, in the church of St. Clara, at the first hour of the day. I was then in my youth. In the same city, and at the same hour, in the year 1348, this luminary disappeared from our world. I was then at Verona, ignorant of my wretched situation. Her chaste and beautiful body was buried the same day, after Vespers, in the church of the Cordeliers. Her

soul returned to its native mansion in heaven. I have written this with a pleasure mixed with bitterness, to retrace the melancholy remembrance of my great loss. This loss convinces me that I have nothing now left worth living for, since the strongest cord of my life is broken. By the grace of God, I shall easily renounce a world where my hopes have been vain and perishing. It is time for me to fly from Babylon, when the knot that bound me is untied."

When Petrarch, in the bitterness of his grief on hearing of the death of Laura, said he had nothing left to live for, he felt as all lovers of his tender and passionate nature must have felt; but not the less, when the severity of the shock passed away, did he act as all men should act in whom the sense of duty is firmly implanted. Love remained, but its character was materially changed; if it still left the poet a dreamer, the patriot appeared with new lustre, invigorated by the concentration of mind which naturally took place when all his earthly hopes and anxieties in connection with Laura were set at rest, and elevated and purified by the religious sentiment now growing stronger and stronger every day of his life. In heaven he felt that Laura might yet be his. We finally quit this part of his history with the following exquisitely tender lamentation, which appears to have been written not long after her death:—

"The eyes I prais'd so warmly, and the face,
And arms, and hands, and feet, whose beauty drew
My spirit from myself at their sweet view,
And made me strange among my fellow race;
Those crisped locks that shone with golden grace,
The angelic mirth that with enchanting glow
Was wont to make a paradise below,
Fill now, unconscious dust, their narrow space.
And yet I live; oh! life too hardly borne!
Reft of the light I loved so well and long,
My weary bark in stormy waves is torn.
Be here an end of all my amorous song:
My vein of inspiration is out-worn,
And nought around my lyre but notes of anguish throng."*

Before we speak of his political life, we must transcribe his biographer's picturesque account of the chief event that occurred in connection with his character as a poet,—we allude to his being crowned at Rome. Laura had the gratification of hearing all the particulars of this splendid ceremony, which took place some years before her death. "The morning of the 8th of April, 1341, was ushered in by the sound of trumpets; and the people, ever fond of a show, came from all quarters to see the ceremony. Twelve youths, selected from the best families of Rome, and clothed in scarlet, opened the procession, repeating, as they went, some verses, composed by the poet, in honour of the Roman people. They were followed by six citizens of Rome, clothed in green, and bearing crowns wreathed with different flowers: Petrarch walked in the midst of them; after him came the senator, accompanied by the first men of the council. The streets were strewed with flowers, and the windows filled with ladies dressed in the most splendid manner, who showered perfumed waters profusely on the poet. He all the time wore the robe that had been presented to him by the King of Naples. When they reached the Capitol, the trumpets were silent, and Petrarch, having made a short speech, in which he quoted a verse from Virgil, cried out three times, 'Long live the Roman people! long live the senators! may God preserve their liberty.' At the conclusion of these words he knelt before the senator Orso, who, taking a crown of laurel from his own head, placed it on that of Petrarch, saying, 'This crown is the reward of virtue.' The poet then repeated a sonnet in praise of the ancient Romans. The people testified their approbation by shouts of applause, crying, 'Long flourish the Capitol and the poet!' The friends of Petrarch shed tears of joy, and Stefano Colonna, his favourite hero, addressed the assembly in his honour."*

* Translated by T. H. Sealy, in 'Life,' vol. ii., p. 373.

Petrarch's political principles were essentially republican; but above all, whether as a republic, a kingdom, or an empire, he yearned for the greatness and glory of Rome. This it was that produced from him so many eloquent epistles to the popes, in the hope of inducing them to remove the papal see from Avignon to Rome. This it was that made him look with the deepest interest and sympathy on the early endeavours of the great tribune Rienzi. Lastly, this it was that, after Rienzi's fall, caused him to expose himself to the charge of inconsistency by beseeching the emperor Charles to assume the real sovereignty of the country, which as yet only nominally belonged to him as the elected king of the Romans. A striking illustration of Petrarch's boldness of character, and the respect in which he was held by the emperor, in common with all the distinguished men of the time, is given in the poet's account of his interview with Charles at Mantua, in 1354:—"He spoke to me about my works, and expressed a great desire to see them, particularly my treatise on illustrious men. I told him that I had not yet put my last hand to it, and that before I could do so I required to have leisure and repose. He gave me to understand that he should be very glad to see it appear under his own patronage, that is to say, dedicated to himself. I said to him, with that freedom of speech which nature has given me, and which years have fortified, 'Great prince, for this purpose nothing more is necessary than virtue on your part and leisure on mine.' He was struck by the freedom of my speech, and asked me to explain myself. I said to him, 'I must have time for a work of this nature, in which I propose to include great things in a small space. On your part, labour to deserve that your name should appear at the head of my book. For this end it is not enough that you wear a crown and a grand title: your virtues and great actions must place you among the great men whose portraits I have delineated. Live in such a manner, that after reading the lives of your illustrious predecessors, you may feel assured that your own life shall deserve to be read by posterity.'"

A brief record of some of the principal affairs in which Petrarch was engaged will show the estimation in which he was held. In 1342 he was sent to Clement VI. by the nobles and people of Rome, to express their earnest desire that the pontiff would remove his court from Avignon to the imperial city: in this mission he was joined by Cola di Rienzi. In 1343, on the death of Robert, king of Naples, he was commissioned by Clement to go to that city, and obtain accurate information as to the state of affairs in that extraordinary period of Neapolitan history, when Giovanna, the young queen, whose life in so many respects reminds us of that of Mary of Scotland, had been but recently married to her brutal cousin Prince Andrew of Hungary. In 1354 Petrarch was placed at the head of an embassy sent by John Visconti, lord of Milan, to Andrea Dandolo, doge of Venice, in order to induce that state to make peace with their neighbours the Genoese. Lastly, in 1361, he went, at the desire of the same powerful family, to congratulate King John of France on his return from captivity in England after his terrible defeat at Poitiers. In short, he was intimate with all the most eminent personages of his country and time: he was consulted by all, employed by all. These and the other various missions in which he was engaged afforded him opportunities, that he knew how to improve to the

* 'Life,' vol. i., p. 209.

utmost, of collecting the rare works of antiquity lying about in the libraries of the few learned men that Italy then possessed, or in the nooks and corners of old monasteries, where their very existence was forgotten. At Arezzo, Petrarch discovered Quintilian's 'Institutions;' at Verona, Cicero's 'Familiar Letters;' and other works of the immortal orator at Liège, &c.

In the summer of 1357, the poet took up his residence at a village called Garignano, on the banks of the Adda, near Milan. "It stands," he says, "on a slight elevation in the midst of a plain, surrounded on all sides by springs and streams, not rapid and noisy, like those of Vaucluse, but clear and modest. They wind in such a manner, that you know not whither they are going or whence they have come. As if to imitate the dances of the nymphs, they approach, they retire, they unite, and they separate alternately. At last, after having formed a kind of labyrinth, they all meet, and poor themselves into the same reservoir. The chief temptation the spot contained for Petrarch was a Carthusian monastery, in which he would have lodged, but for the fear of disturbing the monks with his servants and horses, which he had no desire to dispense with. It was in this agreeable solitude that he wrote the letter containing the fine passage, "Like a traveller, I am quickening my steps in proportion as I approach the term of my course. I read and write night and day; the one occupation refreshes me from the fatigue of the other. These are my employments—these are my pleasures. My tasks increase upon my hands; one begets another: and I am dismayed when I look at what I have undertaken to accomplish in so short a space as the remainder of my life. God, who knows my good intentions, will assist me, if it be necessary for the good of my soul. Meanwhile I watch, and find delight in the midst of the difficulties I encounter. . . . I desire that posterity may know me, and approve of me. If I should not succeed in that ambition, I shall at least have been known to my age and friends."*

An interesting trait of the simple tastes and kindness of heart which Petrarch preserved amidst all the splendours of his fame and the "troops" of sovereign, noble, and distinguished friends by which he appeared to be environed, is afforded by the following anecdote: There was a jeweller of Bergamo, named Enrico Capri, "a man of great natural talents, who would have taken a good station in literature if he had applied himself early enough to study. But though advanced in years more than in learning, he cherished a passionate admiration for the learned, and above all for Petrarch, whose acquaintance he wished to make. Petrarch met his approacher kindly. The jeweller was out of his wits at his condescension; he spent a great part of his fortune in displaying everywhere the name and arms of our poet, whose likeness was pictured or statued in every room of his house. He had copies made, at a great expense, of everything that came from his pen. The passion for literature grew so much upon him that he shut up his lucrative shop, and frequented only schools of science and the society of learned men, of whom there was a considerable number at Bergamo. Petrarch candidly told him that it was too late in life to devote himself exclusively to letters. The man of jewels listened to him like an oracle on all other subjects, but persisted in shutting up his shop. He implored Petrarch to come and see him at Bergamo. 'If he honours my household gods,' he said, 'but for a single day with his presence, I shall be happy all my life, and famous through all futurity.' Petrarch consented to visit him on the 13th of October, 1358. Enrico Capri came to take him at his word, and to bring him to Milan. The governor of the country and the chief men of the city

* 'Life,' vol. ii., p. 208.

received him with the highest honours, and wished him to lodge in some palace; but Petrarch adhered to his jeweller, and would not take any other lodging but with his friend."*

Between this period and the time of his death Petrarch resided successively at Padua; at Venice, where he presented his books to the church of St. Mark, and thus founded that celebrated library; and lastly, at the pleasant village of Arquà, among the Euganean hills, where Petrarch died, on the 18th of June, 1374. He was found by his people in a sitting posture, with his head reclining on a book, in his library, and, as they thought, asleep. But it was the last sleep which had thus peacefully seized him. He was magnificently buried in a chapel of his own erection, in the parish church of the same place. Honours of all kinds were paid to his memory by his mourning countrymen; who exhibited in this, as in every other part of their conduct towards Petrarch, the estimation in which they held the man who had added so much lustre to their beloved Italy, not only by his poems and political conduct, but by his great and successful labours in the revival of literature,—a result more owing to his industry, learning, and genius than to those of any other individual.

London in the Time of the Britons.—The London of the Britons could only have been what Cæsar, and Strabo after him, have described every British town as being, a collection of huts set down on a dry spot in the midst of the marshes, or in a cleared space within a wood, and encompassed, in addition to these natural protections, by the artificial defences of a mound and a ditch. Within these inclosures, Strabo tells us, the inhabitants were accustomed to stall as many cattle as sufficed for a few months' consumption; and Cæsar relates, that when the town or fastness of Cassivellaunus fell into his hands, he found in it a great number of cattle, which he intimates had been brought thither by the people when they came from all parts to take refuge in that chief stronghold. It is probable that most of the cattle, in which we are informed the island abounded, still roamed wild and unappropriated through the woods and pastures—dividing the country with the infinite multitude (*infinita multitudo*) of human beings, by which, as Cæsar notes, it was already peopled. Whether there were any herds regarded as belonging either to individuals or to the various villages and other communities, does not appear. But the southern Britons, we know, practised agriculture, and wore cloth: that is implied in Cæsar's statement, that the ruder tribes of the interior, for the most part, sowed no corn, and were dressed only in skins. The country, therefore, was not all woodland and marsh. No doubt, the southern coast presented already, not only many patches of cultivation, but some considerable tracts brought under the plough. As for London, however, we know that at a date many centuries later a vast forest still covered the country all round it only a few miles back from the river, and that a fen or lake of great extent, whence the part of the metropolis now called Finsbury derives its name, lay on the north-east, close to the city wall. When it was a British town, it probably occupied only the face and summit of the first natural elevation ascending from the river, stretching from between Billingsgate and the Tower, on the one hand, to Dowgate on the other, and going back no farther than to the line of the present Lombard Street and Fenchurch Street. The Wall Brook and the Sher Bourne, on the west, and the Lang Bourne on the north,—though their straggling waters had not yet become known to fame by these or perhaps by any other names,—and to the east the wide-spread marsh, which long after continued to cover the low grounds now occupied by the suburb of Wapping, furnished such natural boundaries as were usually sought for by the founders of these rude settlements. A little to the north of the Lang Bourne, a highway may have passed nearly along the course of Leadenhall Street and Cornhill, prolonging itself along Cheapside, Newgate Street, and Holborn to the west;—Cæsar does not describe his march as if it had been performed through a country without roads;—but immediately beyond this the fen may be supposed to have closed in the town on the one side, and the primeval forest on the other.—*London, No. 9.*

* 'Life,' vol. ii., p. 220.



[*a*, Welsh Pony; *b*, Shetland Pony; *c*, Cart-Horse; *d*, Hunter; *e*, Racer.]

BRITISH HORSES.

The primitive origin of the domestic horse is unknown; probably does not exist. The troops of wild horses which scour the deserts of Tartary are regarded by naturalists, and with justice, as the descendants of a domesticated stock; and the herds of horses which feed in the plains of South America are confessedly derived from horses introduced by the Spaniards, according to Azara, in 1535.

The circumstances attending the subjugation of the wild horse, and the epoch at which this was accomplished, are equally obscure.

It is generally supposed that the Egyptians were the first who reclaimed this animal; they appear, however, to have employed it only in warfare, camels and asses being used as ordinary beasts of burden. It must be observed that the opinion in question is founded on the circumstance of the horse being first noticed in Scripture as a domestic animal in Egypt, exclusively; and from the fact that at a subsequent period Egypt supplied Solomon with horses; but at what period or by what people it may be that the horse was first subjugated, it rapidly spread over Asia, Europe, and the northern districts of Africa; and at some early period, probably by the Celtic tribes gradually pushing their westward course, it reached the British Islands.

When Julius Cæsar invaded our shores, he was opposed not only by infantry, but by horsemen and charioteers; and the skill with which the horses were managed

excited admiration, a circumstance sufficient to prove a long acquaintance with this animal. Historians have called the Celtic natives of Britain barbarians, and represented them as being as low in the scale of civilization as the natives of New Zealand before European enterprise and philanthropy had attempted their amelioration. But the possession of flocks and herds, of trained horses, some for carrying armed men, others for drawing war-chariots, and in both cases managed with the utmost address, proves, independently of other considerations, that the Britons in Cæsar's time were considerably advanced in social refinement.

We do not know with certainty the characters of the ancient British horse; yet, from the rapid movements of the cavalry, and the manner in which the charioteers dashed along, we may readily conjecture that the horses were both light and strong, docile and spirited. Probably they were not of very large size, yet they were highly valued, and were imported, together with British mastiffs, to Rome.

During the dominion of the Romans in Britain, it is probable that the original characters of the British horse became modified by the intermixture of the race with other breeds imported by the conquerors from Italy, Gaul, and Spain; but to what extent this admixture took place we have no means of ascertaining. After the departure of the Romans, the disturbed state of Britain would forbid any attempts at improving the horse, or maintaining a pure and high-spirited breed distinguished above others; yet that such a breed existed there can be little doubt, since Athelstane (A.D. 930) forbade the exportation of horses under any pretence, except as presents to monarchs, a circumstance which suffices to prove that the British, or rather English horse, was then valued on the Continent. It would appear also that in addition to the desire of Athelstane to preserve the native breed, he endeavoured to improve it; and we are informed that he received several German *running horses*, that is, horses formed for speed, from Hugh Capet of France. The Saxons indeed held the horse in high estimation, and the banner of the King of Kent displayed a white horse as the royal cognizance.

The Norman conquest was productive of changes in our English breed, resulting from the introduction of the Spanish horse by some of the barons upon the estates which they had acquired by the right of the sword.

The Crusades brought the English into contact with the noble horses of Arabia and Syria; and there is little doubt but that many of these were brought to our country to the further improvement of our breeds. Two horses of Eastern origin, and purchased at Cyprus, were possessed by Richard Cœur-de-Lion, and are celebrated as unequalled for swiftness. In the reign of John, who, as Rapin observes, possessed scarcely "one valuable qualification," chosen horses were introduced by his direction from Flanders, for the purpose of improving the breed of draught-horses; and that monarch himself accumulated an extensive stud of the most superb horses to be found.

During subsequent reigns, Spanish barbs, Lombardy war-horses, and heavy Flanders horses were obtained. Thus gradually three sets or breeds of horses became established, exclusive of the pony, which from time immemorial has inhabited the districts of Wales, the mountain parts of Scotland, and the Shetland Isles.

Of these breeds one was appropriated for war. Before the invention and ordinary use of fire-arms, knights and horse-soldiers were clad in heavy mail, oppressive to the wearer, but more so to the horse, which was also to a great degree protected in the same manner, especially on the head, neck, and chest. The principal requisite of the war-horse was strength, not however to the exclusion of a certain degree of fleetness. The old war-horse, therefore, was a powerful bony animal, of great spirit, and capable of enduring fatigue; that his figure and action were noble, we have abundant testimony.

Besides this stalwart breed, there was evidently a lighter race, fitted for ordinary purposes—a race of moderate stature, and in which fleetness and strength were more equally combined. Horses of this kind were termed running horses; they were used as hackneys, and also for running races—a sport practised at Smithfield as early as the time of Henry II., though racing was not then what it is in modern days.

The third breed was heavier and slower than the war-horse, and was used for the purpose of draught. This breed, overlooked by the nobles, would necessarily vary in its qualities as circumstances might influence it; but in proportion as the war-horse and hackney improved, so this breed would in an indirect manner partake of the improvement. It is to the introduction of the heavy Flanders horse that its perfection is attributed.

We have alluded to a rude trial of the speed of horses practised at Smithfield as early as the time of Henry II., and it is probable that similar trials were periodically conducted at other places. In the reign of Henry VIII., and especially of Elizabeth, regular race meetings were established at Chester, Stamford, and elsewhere, but we are not to suppose the horses to have been anything like the racers of the present day. They were merely active and fleet hackneys; and the rules and regulations of the turf, as now instituted, were unknown. The passion for this sport, however, gradually increased. In the reign of James I., who encouraged racing both in England and Scotland, it assumed a more definite character, and became guided by rules, to which those who entered into the sport subscribed. To James I. is due the introduction of the Arab horse for the specific object of improving the racer; and one which he purchased from a merchant of the name of Markham, for the then enormous sum of 500*l*., has been highly celebrated.

In the time of Charles I. Turkish and Barbary horses of great value were introduced, nor was the racing stud altogether neglected by Cromwell.

Under Charles II. a new impulse was given to the sport, and many Barbary and Turkish horses were acquired for the purpose of still further improving the racer. And in the reign of Anne, the introduction of the celebrated Arabian horse, by Mr. Darley (and hence called the Darley Arabian), contributed to the establishment of a breed of horses of pure blood and unequalled fleetness.

The Darley Arabian was bred in the deserts of Palmyra, and from him, as their sire, have sprung the best and most celebrated of our modern racing stock. He was the parent of the Flying Childers, Bartlett's Childers, Almanzor, &c., and from these again have descended various branches, all excellent, traceable to the Darley Arabian. Subsequently to the introduction of the Darley Arabian, Lord Godolphin became possessed of a Barb (called the Godolphin Arabian), celebrated not only for its excellence, but for its friendship with a cat. From this horse descended a celebrated stock, to which other Eastern horses, as the Wellesley Arabian, &c., have also contributed. Such then is the origin of the English racer; and in no part of the world can horses be found of equal spirit, power, and fleetness.

The modern hunter, which combines the qualifications of speed and endurance, is a remove from the pure-blood racer in the first degree; a first-rate hunter is generally three-fourths bred, as it is termed. The product of a superior Cleveland mare (a strong useful breed for "all work") and a thorough-bred horse, or racer, or even a three-fourths bred horse, will often

prove a fair hunter; but the product again of this and a pure-blood horse, we apprehend to constitute the hunter *par excellence*. The eagerness with which this noble animal enters into the exciting sport of the chase, and its strength and power of endurance, are well known.

The road-horse, or hackney, formerly constituted a race by itself, allied to the hunter, and not destitute of some of the hunter's blood, but of more compact form and more robustly built. In the present day, however, long journeys on horseback are seldom attempted, and a light half-bred horse is generally preferred for the saddle. The coach-horse and the best breeds for light carriages and chaises are a product of the Cleveland and the hunter of high blood.

If England is celebrated for its racers, hunters, and useful horses for the saddle and light-draught, it is no less so for its heavy-draught horses. Of these the lightest, but one of the strongest, is the Cleveland bay. This race is confined principally to Durham and Yorkshire. Another valuable stock is the Suffolk punch, now nearly extinct, or rather crossed with others. The heavy Lincolnshire black is also celebrated, and exceeds all in size. It is of animals of this breed that the teams in the brewers' and distillers' carts in London are chiefly composed; and no one can behold them without being struck with their noble appearance. Their strength is prodigious; but, from their great weight, their action is slow, and at hard and continued work they would be beaten by well-built muscular horses of less size. Most of these horses exceed seventeen hands in height. Both the Suffolk and the Lincolnshire breeds have been of late years much crossed by the Flanders breed,—to the improvement of both, certainly of the latter. In this cross, the size and bulk of the original Lincolnshire is still retained, but the fore-hand, as Mr. Youatt observes, has been raised, the legs flattened and deepened, and much consequently gained in activity. "The slow heavy black, with his two miles and a half an hour, has been changed into a lighter but still exceedingly powerful horse, who will step four miles in the same time with perfect ease, and has considerably more endurance."

From these elephantine horses, to the Welsh and Shetland ponies, the transition with respect to size is so great, that we are almost startled by the comparison, and wonder that such a difference can exist between two individuals of the same species.

Wales and the Shetland Isles have been ever celebrated for miniature horses, of great beauty, spirit, strength, and hardiness.

The Welsh pony is often a model: a small head, high withers, a deep yet round body, short joints, flat legs, and small round hoofs characterise him: his ears are small, his eye is full and animated, and his actions are free and vigorous. The Shetland pony is still less in size than the Welsh, and is often very handsome, but the shoulders are usually low and thick, the limbs, however, are well knit, and the strength of the animal in proportion to its size is astonishing. Mr. Youatt states that one of these little creatures, only nine hands high, carried a man of twelve stone forty miles in one day.

Some years since (June, 1831) we measured a pony of the Shetland breed, of very small dimensions, but very beautiful. Its height, at the shoulders, was only thirty-four inches. Its length, from between the ears to the insertion of the tail, following the curve of the neck and back, four feet two inches.

Ponies of different degrees of value range the New Forest, Exmoor, and the Highlands of Scotland. A beautiful Galloway (or large pony, about thirteen or fourteen hands high), said to be of Spanish extraction, was once common in the south of Scotland, bordering Solway Frith; it is, however, greatly degenerated. In Wales and Hampshire, Galloways are still bred, but of late years this intermediate race has been neglected.

To enter into all the breeds and crosses of the different stocks into which the English horse seems primarily resolvable is impossible. They are as numerous as the fancy and the judgment of the breeder can make them.

The group at the head of this article represents the Shetland and the Welsh pony, the draught horse, the hunter, and the racer.

Nuremberg.—Nuremberg, with its long, narrow, winding, involved streets, its precipitous ascents and descents, its completely Gothic physiognomy, is by far the strangest old city I ever beheld; it has retained in every part the aspect of the middle ages. No two houses resemble each other; yet differing in form, in colour, in height, in ornament, all have a family likeness; and with their peaked and carved gables, and projecting central balconies and painted fronts, stand up in a row, like so many tall, gaunt, stately old maids, with the toques and stomachers of the last century. The buildings are so ancient, the fashions of society so antiquated, the people so penetrated with veneration for themselves and their city, that in the few days I spent there, I began to feel quite old too—my mind was *wrinkled up*, as it were, with a reverence for the past. I wondered that people condescended to talk of any event more recent than the Thirty Years' War and the defence of Gustavus Adolphus. Nuremberg was the Gothic Athens; it was never the seat of government; but as a free imperial city it was independent and self-governed, and took the lead in arts and literature. Here it was that clocks and watches, maps and musical instruments, were manufactured for all Germany; here were music, poetry, and painting at once honoured as sciences and cultivated as handicrafts, each having its guild, or corporation, duly chartered, like the other trades of this flourishing city, and requiring, by the institution of the magistrates, a regular apprenticeship. It was here that, on the first discovery of printing, a literary barber and meister-singer (Hans Foltz) set up a printing-press in his own house; and it was but the natural consequence of all this industry, mental activity, and social cultivation, that Nuremberg should have been one of the first cities which declared for the Reformation. But what is most curious and striking in this old city is to see it stationary, while time and change are working such miracles and transformations everywhere else. The house where Martin Behaim, four centuries ago, invented the sphere, and drew the first geographical chart, is still the house of a mapseller. In the house where cards were first manufactured, cards are now sold. In the very shops where clocks and watches were first seen, you may still buy clocks and watches. The same families have inhabited the same mansions from one generation to another, for four or five centuries. The great manufactories of those toys called Dutch toys are at Nuremberg. The enormous scale on which this commerce is conducted, the hundreds of waggon-loads and ship-loads of these trifles and gimcracks which find their way to every part of the known world, must interest a thinking mind. A Nuremberger complained to me most seriously of the falling off in the trade of *pill-boxes!* he said that since the fashionable people of London and Paris had taken to paper pill-boxes, the millions of wooden or chip boxes which used to be annually sent from Nuremberg to all parts of Europe were no longer required; and he computed the consequent falling off of the profits at many thousand florins. The extraordinary cemetery of Nuremberg is as unlike every other cemetery as Nuremberg is unlike every other city. Imagine, upon a rising ground, an open space of about four acres, completely covered with enormous slabs, about a foot and a half in thickness, seven feet in length, and four in breadth, laid horizontally, and just allowing space for a single person to move between them. The name and the armorial bearings of the dead, in rich sculpture, or sometimes cast in bronze, decorated these tombs. I remember one to the memory of a beautiful girl, who was killed, as she lay asleep in her father's garden, by a lizard creeping into her mouth. The story is represented in bronze bas-relief, and the lizard is so constructed as to move when touched. From this I shrunk with disgust, and turned to the sepulchre of a famous worthy, who measured the distance from Nuremberg to the Holy Sepulchre with his garter: the implement of his pious enterprise, twisted into a sort of true-love knot, is carved on his tomb.—*Visits and Sketches at Home and Abroad, by Mrs. Jameson.*



[Interior of the Bodleian Library.]

THE BODLEIAN LIBRARY.

SIR THOMAS BODLEY, from whom the Bodleian or Public Library at Oxford takes its name, was the eldest son of Mr. John Bodley of Exeter, by Joan, daughter and heiress of Robert Home, Esq., of Ottery St. Mary. He was born at Exeter, March 2, 1544. He was about twelve years of age when his father, being obliged to leave England on account of religion, settled with his family at Geneva, where he lived a voluntary exile during the reign of Queen Mary. Upon the accession of Queen Elizabeth, in 1558, he returned to England with his father and family, who settled in London, and was soon after sent to Magdalen College, Oxford, where he was placed uner the tuition of Dr. Humphrey, afterwards president of that society. In 1563 he took the degree of B.A., was chosen probationer of Merton College the same year, and the year following was admitted fellow. In 1566 he took the degree of M.A., and in the same year read natural philosophy in the public schools. In 1569 he was elected one of the proctors of the University, and after that, for a considerable time, supplied the place of University orator. In 1576, being desirous to improve himself in the modern languages, and to qualify himself for public business, he began his travels, and passed nearly four years in visiting France, Germany, and Italy. Afterwards, returning to his college, he applied himself to the study of history and politics. In 1583 he was made gentleman usher to Queen Elizabeth, and in 1585 married Anne, daughter of Mr. Carew of Bristol, and widow of Mr. Ball, a lady, as Wood informs us, of considerable fortune. Soon after, he was employed by Queen Elizabeth in several embassies to Frederic, king of Denmark, Julius, duke of Brunswick, William, landgrave of Hesse, and other German princes, to engage them to join their forces with those of the English for the assistance of the king of Navarre, afterwards Henri IV. of France; and having discharged that commission, he was sent to King Henri III., at the time when that prince was forced by the Duke of Guise to quit Paris. In 1588 Mr. Bodley was sent to the Hague to manage the queen's affairs in the United Provinces, where, according to an agreement between the queen and the States, he was admitted one of the Council of State, and took his place next to Count Maurice, giving his vote in every proposition made to that assembly. In this station he behaved greatly to the satisfaction of his royal mistress and the advancement of the public service. After nearly five years' residence in Holland, Mr. Bodley obtained leave to return into England to look after his private affairs, but was shortly afterwards remanded back to the Hague. At length, having succeeded in all his negotiations, he obtained his final recall in 1597. After his return, finding his advancement at court obstructed by the jealousies and intrigues of the great men, he retired from it and from all public business, and never could be prevailed upon to return or to accept any new employment. In the same year he set about the noble work of restoring, or rather, founding anew the public library at Oxford, which was completed in 1599. After King James's accession to the throne, Sir Thomas Bodley received the honour of knighthood. He died the 28th of January, 1612, and was buried with great solemnity at the upper end of Merton College choir.

The first public library in Oxford was established in what was then called Durham (since Trinity) College, by Richard de Bury, or Aungerville, bishop of Durham and lord treasurer of England, in the time of Edward III. He died in 1345, and left his books to the students of Durham College, who preserved them in chests, until the time that Thomas de Hatfield, his successor in the see of Durham, built the library in 1370

The next we read of was called Cobham's Library, which would have been the first, if Thomas Cobham, bishop of Worcester, had lived to have executed his own purpose. About the year 1320 he began to make

some preparations for a library over the old Congregation-House, in the north church-yard of St. Mary's; but, dying soon after, little progress was made in the work till 1367, when his books were deposited in it, and the scholars permitted to consult them on certain conditions. But the property of the site being contended between the University and Oriel College, the dispute was not finally determined till 1409, when the room was fitted up with desks, windows, &c., by the benefactions of King Henry IV., of his four sons Henry, Thomas, John, and Humphrey, of Thomas Arundel, archbishop of Canterbury, Philip Repindon, bishop of Lincoln, Edmund, earl of March, and Richard Courtney, chancellor of the University, in whose time it was completed, about the year 1411. This appears to have been the first public library, and continued in use until 1480, when the books were added to Duke Humphrey's collection, for the reception of which a library-room had been completed.

Humphrey, surnamed the Good Duke of Gloucester, a man superior to the age in which he lived, was the real founder of the library which was afterwards restored and refounded by Sir Thomas Bodley. The number of books given by Duke Humphrey is variously represented. Wood (*Hist. and Antiq. of the Univ. of Oxford*, vol. ii., pt. ii., 4to., Oxford, 1796, p. 715) says the different treatises amounted to six hundred: one only specimen at present remains, a manuscript, in folio, of Valerius Maximus, enriched with the most elegant decorations, and written in Duke Humphrey's age, evidently with the design of being placed in his sumptuous collection. The rest of the books, which, like this, being highly ornamented, and looking like missals, were supposed to convey ideas of Popish superstition, were destroyed or removed by the visitors of the University in the time of Edward VI., whose zeal was equalled only by their ignorance. A manuscript commentary on Genesis, by John Capgrave, belonging to Duke Humphrey's library, is still preserved in that of Oriel College Oxford; and one if not more manuscripts formerly belonging to the collection are in the British Museum: most of them, at the end, had usually this inscription written in the Duke's own hand: "C'est livre est a moy Humfrey Duc de Gloucestre." Before the year 1555 the Duke of Gloucester's Library was totally despoiled of its contents, and the desks and benches ordered to be sold: the room continued empty until restored by Sir Thomas Bodley.

It was in 1597 that, as Camden justly observes, Sir Thomas Bodley set himself a task which would have suited the character of a crowned head—the restoration of the Public Library. With this view he sent a letter from London to the vice-chancellor Dr. Ravis, dean of Christ Church, offering to restore the building and settle a fund for the purchase of books, as well as the maintenance of proper officers. This offer being gladly accepted, he commenced his undertaking by presenting a large collection of books purchased on the Continent, and valued at £10,000. Other collections and contributions were sent in, by his example and persuasions, from various noblemen, clergymen, and others, to such an amount, that the old building was no longer sufficient to contain them. He then proposed to enlarge the building; and the first stone of the new foundation was laid with great solemnity, July 17, 1610, and so amply promoted by his liberality, as well as by the benefactions of many eminent persons, that the University was enabled to add three other sides, forming the quadrangle and rooms for the schools, &c. He did not, however, live to see the whole completed, as the time of his death, already recorded, will explain.

When Sir Thomas Bodley had succeeded in enriching his collection, probably far beyond his expectation, he drew up a body of statutes, which have been since incorporated with those of the University. According to them, the librarian is to be a graduate, unmarried, and without cure of souls; and to be allowed deputies or assistants. One or two points in these regulations have been since altered; the librarian is allowed to marry, and he can hold parochial preferment with his librarianship. The revenues for the maintenance of the library are intrusted to the vice-chancellor and proctors for the time being; and the vice-chancellor and proctors, the three professors of divinity, law, and physic, and the two regius professors of Greek and Hebrew are appointed visitors.

Several catalogues of the books in the library have been published; the last general catalogue in 1738; but from the immense increase of the collection it has become but of little use. Another was undertaken a few years ago and had proceeded, under the direction of the present librarian, Dr. Bandinel, to some extent in the printing; but we are informed that the publication has been since abandoned. A few catalogues of particular portions of the Bodleian collections have also been published at different times. The curators of the Bodleian have for many years published, or rather printed and distributed, and continue to print and distribute, annual alphabetical catalogues of its acquisitions in the department of printed books, for the information of the University.

An annual speech in praise of Sir Thomas Bodley was founded in 1681, by Dr. John Morris, canon of Christ Church; the speaker to be nominated by the dean of Christ Church, and confirmed by the vice-chancellor. These speeches are delivered at the visitation-day of the library, November the 8th.

It would require a volume to enumerate the many important additions, in books and manuscripts, made to this library by its numerous benefactors, or to give even a superficial sketch of its ample contents in every branch of science and learning. Among the earliest benefactors were Robert Devereux, earl of Essex, Thomas Sackville, lord Buckhurst and earl of Dorset, Robert Sidney, lord Sidney of Penshurst, viscount Lisle and earl of Leicester, &c. &c. The most extensive and important collections, however, are those of the Earl of Pembroke, the celebrated Mr. John Selden, Archbishop Laud, Sir Thomas Roe, Sir Kenelm Digby, General Fairfax, Dr. Marshall, Dr. Barlow, bishop of Lincoln, Dr. Richard Rawlinson, Mr. St. Amand, Bishop Tanner, Browne Willis, Thomas Hearne, Mr. Nathaniel Crynes, and Mr. Godwin. The library bequeathed by Richard Gough, Esq., which came to the Bodleian in 1812 (the catalogue of which has been already noticed), is perhaps the most perfect series of English topographical works ever formed, and is particularly rich in topographical manuscripts, prints, drawings, and books illustrated by the manuscript notes of eminent antiquaries. The last collections of great importance bequeathed to the Bodleian have been those of Edmond Malone, Esq., in 1812, and of Francis Douce, Esq., in 1834.

The Bodleian Library was first opened to the public on November 8th, 1602, and by the charter of mortmain obtained of King James, Sir Thomas, then lately knighted by him, was declared founder; and, in 1605, Lord Buckhurst, earl of Dorset, and chancellor of the University, placed the bust of Sir Thomas in the library.

Since the year 1780 a fund of more than £400 a year has been established for the purchase of books. This arises from a small addition to the matriculation fees, and a moderate contribution annually from such members of the University as are admitted to the use of the library, or on their taking their first degrees; to

which is to be added the privilege claimed as a matter of right, under the Copyright Act, of a copy of every book printed in Great Britain and Ireland.

All members of the University who have taken a degree are admitted to study in the library; no books have ever been suffered to be taken from it. Literary persons, either native or foreign, are also allowed, on being properly recommended, to read and take extracts from the books in this collection. By the provisions of a statute promulgated and confirmed in full convocation, December 2, 1813, the officers of the library were increased to a principal librarian, two under-librarians, with the degrees of M.A. or B.C.L. at least, and two assistants, either B.A. or under-graduates. The library is open between Lady-day and Michaelmas, from nine in the morning till four in the afternoon; and during the other half-year from ten till three. It is closed on Sundays and state holidays; from Christmas-eve to the 1st of January inclusively; on the feast of the Epiphany; from Good Friday to Easter Tuesday inclusively; on the days of Encænia and commemoration; seven days immediately following the 1st of September; and eight days preceding the visitation of the library. On all other holidays it is opened immediately after the University sermon.

Sir Thomas Bodley wrote his own life to the year 1609, which, together with the first draft of his statutes for his library, and a collection of his letters, were published from the originals in the Bodleian by Thomas Hearne, under the title of 'Reliquiæ Bodleianæ, or some genuine Remains of Sir Thomas Bodley,' 8vo., Lond., 1703. The Life alone had been previously published in 4to., Oxford, 1647.

Materials exist for an extended Life of Sir Thomas Bodley in his public capacity, in several of our libraries, more especially in the Cottonian and Harleian collections of manuscripts in the British Museum, and among the Bacon papers in the Archiepiscopal Library at Lambeth.

CHAUCER'S PORTRAIT GALLERY.

THE DOCTOR OF PHYSIC.

IN the elaborate portrait which the poet has given us of this member of the Canterbury pilgrimage, we have a striking exemplification of the state of medical science in the fourteenth century, and of the qualifications requisite for the attainment of eminence in the profession. It is said of this—

"————— Doctor of physic,
In all this world ne was there none him like
To speak of physic and of surgery;
For he was grounded in astronomy.
He kept his patiént a full great deal
In hourés by his magic natural.
Well could he fortunen* the áscendant
Of his imáges for his patiént.

By "astronomy" we must rather understand astrology, the two being more or less confounded in the history of science down even to a much later period than that of Chaucer. In astrology, then, the heavens were divided into twelve parts or houses: of these the most important was the first, containing the part of the heavens about to rise, hence called the ascendant, and which had influence on all matters concerning life. According to the planet which came into conjunction with the "ascendant" at the time of any particular crisis in the "patient's" disease, depended the latter's chance of recovery. If we understand Chaucer rightly, therefore, the "magic natural" was brought in by the physician to enable him to choose the most favourable "houres" for bringing on that crisis, and for the adoption of whatever means were thought most desirable.

The art of medicine, if art it might be called at this time in England, was borrowed from ancient Greece, with such improvements only as may have been made in it by the Arabs, who translated the principal Grecian writers into their language, and became during the seventh and five following centuries the most eminent practitioners in the world. As an evidence of their great reputation it may be observed that Sancho the Fat, king of Leon, went in person, in 956, to Cordova, the then great capital of Moorish Spain, to be cured of an illness. Not long before Chaucer's time the works of the principal Greek and Arabic writers, having been translated into Latin, found their way into this country, and so formed the basis of that art which now (cleared of the superstitions in which it was formerly embedded) stands pre-eminently forward as one of the greatest blessings of civilization. About the period of the 'Canterbury Tales,' these superstitions existed in full vigour. A physician who was no astronomer would then have been looked upon, we presume, as a quack of modern days; ignorance, in both cases, of the knowledge indispensable to the successful cultivation of the art being presumed. Thus we find that Hugo de Evesham (of Worcestershire), who studied not only at both the universities of England, but subsequently at those of France and Italy also, and who became the most famous physician of his day—he too, we find it recorded, was scarcely less distinguished for his mathematics and astronomy. Again, his great contemporary Roger Bacon, far-sighted, and singularly unprejudiced to existing opinions as he was, remarks, in his 'Opus Major,' that *astronomy is the better part of medicine*. Charles V. of France, who directed his every movement by the advice of his astrologers, established a college of medicine and astrology in the university of Paris. In the continuation of the 'Canterbury Tales,' before referred to, under the title of the 'Tale of Beryn,' we find a surgical operation on the eyes performed by the assistance of the occult sciences.

"The whole science of all surgery
Was undyd, or the chaunge was made of both eye
With many sotill enchantours and eke negrymauncers
That sent were for the nonis,* maistris and scoleris."

Lastly, we may observe that Persia, even to this day, abounds with physicians and astrologers; and a Persian rarely follows the prescriptions of the one class without first ascertaining from the other that the constellations are favourable to the proposed remedy. Yet we must not suppose, after all, that our ancient physicians relied on the virtue of these heavenly influences, to the neglect of more substantial medical knowledge or skill. Chaucer's 'Doctor of Physic,' for instance, besides being so well "grounded in astronomy"—

"Knew the cause of every malady,
Were it of cold or hot, or moist or dry,
And where engendered and of what humoúr:
He was a very perfect practisour.
The cause yknow,† and of his harm the rote
Anon he gave to the sick man his bote.‡
Full ready had he his apothecaries
To send him druggés and his lectuaries;
For each of them made other for to win:
Their friendship was not newé to begin."

Dr. Freind, in his 'History of Physic,' gives still more emphatic testimony to the same effect. He says, "Though we find the people of that age had great faith

* *Fortunen*—determine the good or bad fortune of.

* Nones—occasion. † Known. ‡ Remedy.

in charms and other empirical applications, yet the general practice was carried on chiefly in the rational way, as it had been delivered down from the Greeks." This subject receives further illustration from the description Chaucer gives us of the doctor's library:

> "Well knew he the old Esculapius,
> And Dioscorides, and eke Rufus;
> Old Hippocras, Hali, and Gallien,
> Serapion, Rhasis, and Avicen,
> Averroes, Damascene, and Constantine,
> Bernard, and Gatisden, and Gilbertine."

Of these authors, we need say nothing respecting old Esculapius, Hippocrates, Galen, or Dioscorides; as to the others, Warton, in his 'History of Poetry,' and Dr. Freind, furnish some not uninteresting particulars. Rufus, a physician of Ephesus, wrote in Greek, about the time of Trajan. Haly was a famous Arabic astronomer, and a commentator on Galen, in the eleventh century, which produced so many famous Arabian physicians, among others John Serapion, who wrote on the practice of physic, and Avicen, the most eminent of the number. Rhasis, an Asiatic physician, practised at Cordova in Spain, where he died in the tenth century. Averroes, as the Asiatic schools decayed by the indolence of the caliphs, was one of those philosophers who adorned the Moorish schools erected in Africa and Spain. He was a professor in the university of Morocco. John Damascene was secretary to one of the caliphs; he wrote on various sciences before the Arabians had entered Europe, and had seen the Grecian philosophers. Constantinus Afer, a monk of Cassino in Italy, was one of the Saracen physicians who brought medicine into Europe, and formed the Salernitan school (the first of the kind established in Europe), chiefly by translating various Arabian and Grecian medical books into Latin. His history is peculiarly interesting. He was born at Carthage, and learned grammar, logic, geometry, arithmetic, astronomy, and natural philosophy of the Chaldees, Arabians, Persians, Saracens, Egyptians, and Indians, in the schools of Bagdad. Being thus completely accomplished in these sciences, after thirty-nine years of study he returned into Africa, where an attempt was formed against his life. Constantine, having fortunately discovered this design, privately took ship, and came to Salerno in Italy, where he lurked some time in disguise. But he was recognised by the Caliph's brother, then at Salerno, who recommended him as a scholar universally skilled in the learning of all nations, to the notice of Robert, duke of Normandy. Robert entertained him with the highest marks of respect; and Constantine, by the advice of his patron, retired to the monastery of Cassino, where, being kindly received by the Abbot Desiderius, he translated in that learned society the books above mentioned, most of which he first imported into Europe. These versions are said to be still extant. He flourished about the year 1086.

Bernard, or Bernardus Gordonius, appears to have been Chaucer's contemporary. He was a Professor of Medicine at Montpelier, and wrote many treatises on the art.

John Gatisden was a fellow of Merton College, where Chaucer was educated, about the year 1320. Dr. Freind gives an interesting account of him.* He was the author of a famous medical work called 'Rosa Anglica;' and though, to confess the truth, he was not much better than an empiric, yet he seems to be one of the best in that way, and manages his affairs with great address. He was, as it appears from his own writings, ingenious enough to see through the foibles of human nature; he could form a good judgment how far mankind could be imposed upon, and never failed to make his advantage of their credulity. He is very artful in laying baits for the delicate, for the ladies, for the rich. For the former he has such a tenderness that he condescends to instruct them even in perfumes and washes, especially some to dye their hair; and such a respect for the latter, that he is always studying to invent some of the most select and dearest medicines for them." He was also a poet. Scarce a page of his works but he quotes the verses of others or inserts his own. He was the first Englishman employed at court as a physician, and had the care of the king's son (a son of either Edward I. or Edward II.) in the small-pox. Here he played his game very well; and to show his skill in inflammatory disorders, he, with a proper formality and a countenance of much importance, ordered the patient to be wrapped in scarlet, and everything about the bed to be red; no doubt the room was hung in the same manner. This he says made him recover, without so much as leaving one mark upon his face. Whenever a scrofulous case does not submit to the sovereign remedies, such as the blood of a weazle or doves'-dung, he exhorts the person immediately to apply to the king for the royal touch. He acquaints us with his great skill in physiognomy; and did design, if God would give him life and leisure, to write a treatise of chiromancy, or fortune-telling.

"Gilbertine, I suppose," says Warson, "is Gilbertus Anglicus, who flourished in the thirteenth century, and wrote a popular compendium of the art, and was the first of his countrymen who enjoyed any repute in that way."

The distinction of the three regular orders into which the profession is now divided, was also known in Chaucer's time, as we perceive from the preceding passages, where it is stated that there were none like his doctor in the world to speak of *physic* or of *surgery*, and that he had his *apothecaries* full ready to send him his drugs. His very title also shows that degrees were granted thus early to proficients in medical education. That of Bachelor of Physic appears to have been conferred in Oxford soon after the Conquest. The remainder of Chaucer's description is occupied with those personal traits which exhibit the individual, as well as the class, so vividly, that it is impossible to avoid coming to the conclusion that Chaucer, like all other great painters, drew to a certain extent from the life. Could that sly bit of satire, "his study was but little in the Bible," have crept into the place it occupies, but that the *fact* caught the poet's eye as he glanced over the habits and person of the living Doctor of Physic, who stood before him unsuspicious of the immortality that awaited him?

> "Of his diét measúrable was he,
> For it was of no superfluity,
> But of great nourishing, and digestible.
> His study was but little in the Bible.
> In sanguine and in perse he clad was all,
> Lined with taffeta and eke sandal;
> And yet he was but easy of dispence,
> He kepté that he won in the pestilence:
> For gold in physic is a cordial;
> Therefore he loved gold in special."

The wit of this last couplet is enhanced by our knowledge of the truth of the notion on which it is founded. The great philosopher before mentioned, Bacon, gives broad hints, in his work 'On the Accidents of Old Age,' about a tincture of gold which might contribute greatly to prolong life; and he recites a remarkable story of an old Sicilian ploughman, who, by drinking greedily of a yellowish stream (which our author suspects was impregnated with gold), grew young again, and lived many years in full vigour.

The dress of "sanguine" and "perse" is illustrated

* Vol. ii., p. 277-292.

in the Sutherland manuscript by a surcoat of *bright purple*, and a *blue* hood covering the head and extending low down upon the shoulders, deeply furred with white. His stockings are also of bright purple. The Doctor is here represented as pondering over the contents of a large phial.

THE THERMOMETER.

In the Monthly Supplements of our last year's volume, among the meteorological phenomena recorded in the almanac, are the average indications of the thermometer for each month; thus, in October, we find it stated that the mean temperature is 42·9°, the highest 62°, and the lowest 23°. We will endeavour to give a popular account of the phenomena involved in these indications of the thermometer; in the same manner as we lately did with respect to the barometer.

It may naturally be supposed, that before we can understand the action of a heat-measurer (which is the precise meaning of the word 'thermometer'), we ought to be familiar with the nature of the thing measured. But the truth is, that notwithstanding the investigations and experiments made by men of science, we know but little respecting heat except by its *effects*. Some think that it is a very subtle and attenuated fluid, capable of passing out of one substance into another; while others suppose it to be merely a vibration or intestinal motion among the particles of which bodies consist. We may therefore at once pass over this matter, as one still in dispute, with the remark that so far as popular notions are concerned, it seems most convenient to deem heat a fluid capable of transference from body to body.

Of the various effects which heat exerts on ordinary substances, some are familiar to us in our every-day experience, and others are only manifested by the careful experiments of philosophers: but the only effect which need be considered in this article is that of *expansion*, or that property by which a body enlarges in bulk according as its temperature becomes higher, or, in common parlance, according as it has more heat in it. This is the property on which the action of the thermometer depends.

If we have a small cylinder of metal which, when cold, precisely fits into a hole in another piece of metal, the cylinder, when heated, will no longer enter the hole or tube, the diameter having been increased by the process of heating. Or if we have an iron ball which, when cold, will just pass through a ring, the ball will not do so when heated. The extent of expansion is very small, so as not to be perceived unless the apparatus be accurately made; but, so far as it goes, it is an unerring and inevitable effect. How it is brought about we do not know; but it would appear that the particles of metal are driven farther asunder by the accession of heat. If we have a bar of cast-iron at the temperature of the freezing-point, or 32°, and then heat it to the temperature of boiling water, *i.e.* 212°, its length will be increased about one-thousandth part of the whole; if it were of silver, the elongation would be about a five-hundredth part; and if of lead, a three-hundred and fiftieth; different metals possessing different expansive powers by the effect of heat.

But when we come to the case of liquids, we find that, not only do they expand by heat, but that they do so to a much greater extent than solids. Thus, mercury, when raised from 32° to 212°, expands about a fiftieth part, or fifty parts become fifty-one by the effect of the increase of heat; water expands about a twenty-eighth part; and alcohol about a ninth part. The last is a very extraordinary example, indicating that nine pints (or any other measure) of alcohol become ten by this increase of temperature.

Now it is found that, other things being equal, any given substance, say a piece of iron, will resume its former dimensions when the additional amount of heat which has been imparted to it is withdrawn; and this proceeds on such an invariable rule, that the enlargement of bulk in a heated body becomes an index of the increase of temperature to which it has been exposed. If the body be a liquid, the change of bulk, being larger in ratio, is more perceptible. The way in which this property becomes useful to man may be thus illustrated. Suppose that in the process of brewing it be found that fermentation goes on more favourably at one degree of heat than at any other either higher or lower. The brewer wishes to take a note, to make a memorandum, by which he may produce that same favourable temperature at a future brewing. How is he to effect this? The colour, the odour, the weight, if influenced at all, would be so to an extent too slight for his purpose. But let us imagine that he has a piece of any substance, say a metal rod, so susceptible to the influence of heat, that the length would be sensibly increased by the addition of a little of that agent. He might devise means for ascertaining its length when immersed in water at the freezing temperature, and also at the boiling temperature; and likewise when immersed in the fermenting liquor at a medium temperature; and might thenceforward use the metal rod as an indicator of the fermenting temperature; inferring that when the malt liquor is so heated as to give such and such a length to the iron rod immersed in it, that heat is the proper one for the process of fermentation.

We may suppose some such ideas as these to have passed through the mind of the philosopher who first constructed a thermometer: and that, knowing the superior expansibility of liquids, he next thought of using a liquid as the heat-measuring instrument. In the beginning of the seventeenth century, we hear of a thermometer being made, not indeed of liquid, but of air confined in a glass tube. Air, in being heated from 32° to 212°, increases its bulk about 37½ per cent., and therefore furnishes a still more conspicuous instance of expansion than liquids; but there are various reasons why air is not suited for such a purpose.

The first successful attempt to make a thermometer in which the expansible body should be a liquid, seems to have emanated from the Florentine academicians, who employed spirits of wine in the following manner:—A tube connected with a bulb was heated so as to expel a portion of air; and the open end of the tube was immersed in spirits of wine, which, as the bulb cooled, was forced up by atmospheric pressure into the stem and bulb. The bulb was then held downwards, and a flame applied to it, so as to boil the spirits and drive the remaining air from the tube. While the vapour was issuing from the end of the tube, the flame of a blow-pipe was applied to it, by which the glass was fused, and the end closed. The bulb and part of the tube were thus filled with spirits of wine, the upper portion of the tube being nearly a vacuum. Whenever, then, this glass vessel was exposed to various heats, either in liquids or in the open air, the spirit enlarged or contracted its bulk, as the case might be, and therefore occupied a greater or less height than before in the tube. The constructors made a mark to indicate the height to which the spirit rose when exposed to the cold of snow, and another mark, higher up, when exposed to the summer heat of Florence; and these two marks thus served in some measure as a guide.

[To be continued.]



At top.—View of Worcester, from an old print. The battle was fought on the foreground meadows. In the centre, the flight of Charles before the Parliamentary Soldiers; designed from various contemporary portraits of Charles II., Harrison, Lilburne, Bradshaw, and others. At the bottom the old wooden house, in the Corn Market, Worcester, in which Charles lodged.

LOCAL MEMORIES OF GREAT EVENTS.

BATTLE OF WORCESTER.

The battle of Worcester, gained by Cromwell, September 3, 1651, is one of those points in English history from which may be conveniently taken a view both retrospective and prospective of a period of the very highest interest and importance. Looking to the events anterior to but connected with the Battle of Worcester, we find Charles I., who succeeded his father in 1625, attempting to govern without the aid of parliaments, and in 1634 he issued writs directing the sheriffs of the different counties to collect from each of the inhabitants, according to their means, a sum of money for the equipment of ships for the king's service. This tax, known by the name of ship-money, was at first generally paid, though known to be illegal. John Hampden, a gentleman of fortune and good family in Buckinghamshire, an earnest lover of liberty and a true patriot, he alone brought the question before the courts of law. The judges were weak enough to assert that the king could, by his own royal authority, levy that or any other tax. The question was henceforth to be decided in the field. The royalists were beaten at Edge Hill, in 1642; at Marston Moor, in 1644; and lastly, at Naseby, in 1645. In England they never rallied in the field after the flight from Naseby; and in less than five years, namely, on the

30th of January, 1649, the king was beheaded at Whitehall.

Charles II. was residing at the Hague at the period of his father's execution. His friends in England were suffering under confiscations and imprisonment, and the royalist party, which had engaged with such high spirit in the cause of the late king, was broken and subdued. Many an antient family which had lived peacefully in the enjoyment of its broad possessions since the wars of the Roses, was now, as Clarendon states, glad to compound for one half of their estates by giving up the other half. The young king was, however, proclaimed in Scotland and in Ireland. In the latter country a rebellion was excited against the authority of the parliament, which was put down in the spring of 1650 by Cromwell. The state of parties in Scotland led to some important movements on behalf of the royal exile. They had proclaimed his accession as soon as his father's death was known, but it was not until June, 1650, that he landed in Scotland. An army was raised in Scotland, which prepared to march over the border. On the 3rd of September, Cromwell defeated the Scots army at Dunbar, and the king was forced to withdraw into the Highlands. Charles and his adherents again collected an army, and took up a strong position near Stirling, receiving supplies from the Highlands; but Cromwell laid siege to Perth, intending to prevent the Highlanders sending supplies either of men or provisions to Stirling. The king, with the advice of his council, now determined upon the bold step of marching into England, and this resolution was executed with so much secrecy and expedition, that Charles, who was previously so much nearer England, had marched a whole day without Cromwell being able to understand the nature of his movements. When he did see their object, it was difficult to determine the course to be pursued. "If he followed with his whole army, all the advantages he had got in Scotland would be presently lost. . . . If he followed but with part, he might be too weak when he overtook the king, whose army, he knew, would bear the fatigue of a long march better than his could do so."* His situation was a critical one, but his resolution was quickly taken. He despatched an express to the Parliament to prevent their being surprised with the news of Charles's advance: Lambert, the Parliamentary general, was immediately despatched with a body of horse, with directions to hang on the rear of the king's army and to disturb and harass it; and Monk being left with some troops to keep things quiet in Scotland, Cromwell began his own march three days after the king was gone.

Both armies advanced with the greatest rapidity. The king, on approaching Shrewsbury, summoned it to surrender, but this demand being firmly denied, the army marched towards Worcester, a city which had been well affected to the late king, and was one of the last to surrender to the Parliament. The principal gentry of the county were at the time prisoners in the city, but on the king's approach all those who were employed by the Parliament fled, and the gates of the city were opened to Charles by his friends, who were now restored to their liberty. Here the wants of the army were relieved, and good quarters provided for them after the fatigue of so long and harassing a march. Cromwell had proceeded by the nearest way towards London, and the two armies were about an equal distance from the capital. Clarendon thus speaks of the advantages of Worcester in that day as a military position :—"It was a very good post, seated almost in the middle of the kingdom, and in as fruitful a country as any part of it; a good city, served by the river of Severn from all the adjacent counties; Wales behind it, from whence levies might be made of great numbers of stout men: it was a place where the king's friends might repair, if they had the affections they pretended to have; and it was a place where he might defend himself, if the enemy would attack him, with many advantages, and could not be compelled to engage his army in a battle till Cromwell had got men enough to encompass him on all sides; and then the king might choose on which side to fight, since the enemy must be on both sides the river, and could not come suddenly to relieve each other, and the straitening the king to this degree would require much time, in which there might be an opportunity for several insurrections in the kingdom, if they were so weary of the present tyranny and so solicitous to be restored to the king's government as they were conceived to be · for nobody could ever hope for a more secure season to manifest their loyalty than when the king was in the heart of the kingdom, with a formed army of about fifteen thousand men, horse and foot (for so they might be accounted to be), with which he might relieve those who were in danger to be oppressed by a more powerful party. These considerations produced the resolution to provide in the best manner to expect Cromwell there; and a hope that he might be delayed by other diversions: and there was like to be time enough to cast up such works upon the hill before the town as might keep the enemy at a distance, and their own quarters from being suddenly straitened: all which were recommended to General Lesley to take care of, and to take such a perfect view of the ground that no advantage might be lost when the time required it."

Few or none of the English gentry rallied round the royal standard. There was at the same time little unanimity between the officers of the royal army; and news had been received of the defeat of the Earl of Derby, who had remained to recruit the king's forces in Cheshire and Lancashire. These reverses, and any other untoward circumstances, instead of rendering the royalist generals more united, and more urgent in establishing order amongst their troops quartered in the city and in raising the necessary works for its defence, seem rather to have paralysed them, so that little was done to improve the natural advantages of their position.

The king had been several days in Worcester when Cromwell was known to be within less than half a day's march. His army was increased by large reinforcements, particularly of cavalry and the militia of different counties. He did not trouble himself to besiege the place, but, as Clarendon says, "marched on directly as to a prey," and quickly made himself master of all the strong points which commanded the city, in which he met with very little opposition. On the 3rd of September he directed his troops to fall on in all places at once; the royalists were soon in confusion; the resistance which was attempted by some of them, however gallant, being totally ineffectual. They were in fact thoroughly defeated, and it was with the greatest difficulty that the king made his escape. The account of his concealment at Boscobel House, and some particulars relating to his adventures while he remained a fugitive in the kingdom, will be found in a former Number (522). He never visited England again until his Restoration.

The battle of Worcester, which Cromwell, in the language of that day, termed his "crowning mercy," was fought on the anniversary of his victory at Dunbar. From this period he advanced to the supreme power by overcoming the factions into which the anti-royalist party itself was divided. On the 20th of April, 1653, he dissolved the Long Parliament, and took the government into his own hands.

* Clarendon, book xiii., p. 535.

THE DISSEMINATION OF THE SEEDS OF PLANTS.

An early volume (the fourth) of Brande's 'Quarterly Journal of Science' contains an interesting article, by M. Mirbel, upon the modes in which the spontaneous dissemination of plants is accomplished: a few remarks upon this subject, taken from that paper, and from other sources, will probably prove interesting to our readers.

The beautiful processes going on within the floral envelope of a plant for the maturation of its seeds would often seem objectless, unless adequate means for their dispersion existed. That this is effected, the constant and regular re-appearance of the countless races of the vegetable world attest; but since spontaneous movements have been denied to plants, and man's immediate agency is but very limited, other causes of extensive operation must exist. Of these one of the most prominent is the wonderful fecundity of plants. Ray counted 32,000 seeds in the heads of one poppy-plant, and 360,000 on one tobacco-plant. Dodort mentions an elm which produced 529,000 seeds. Yet none of these vegetables are among the foremost in degree of fecundity. The number of seeds borne by a plant of Begonia or Vanilla, but above all by a fern, confounds calculation. But, as Linnæus observes, supposing any annual plant produced only two seeds yearly, even of this, after twenty years, there would be 1,048,576 individuals. The great longevity of many seeds tends to the same end, for although some descriptions soon spoil, and hence require to be sown as soon as ripe, the greater proportion will preserve the germinating faculty for years, and even for ages. Professor Lindley observes that this would seem chiefly to depend on the degree of protection the integuments of the seed afford it; for, as gardeners well know, it is impossible to preserve very delicate seeds with thin skins more than a few weeks or months; so, on the other hand, hard horny seeds will germinate after the lapse of a very long portion of time. "When land is cleared, or ancient ditches emptied, or earth broken up to a considerable depth, as in well-digging, it not unfrequently happens that plants spring from the mould, whose seeds must have been buried for many years or ages." Horne sowed with success barley that had been gathered a hundred and fifty years. Wheat has been discovered in subterraneous hoards, which had been lost and forgotten for time out of mind, in as perfect a state as the day it was reaped. Melon seeds have grown after forty-one years, Indian wheat after thirty years, rye after forty years, sensitive plants after sixty years, and kidney beans taken from Tournefort's Herbarium a hundred years after they were gathered.

Seeds thus abundantly produced and securely preserved are scattered abroad by various agencies, not only in this manner filling up voids which would otherwise exist, but also preventing that barrenness and impoverishment which occur when they are accumulated in great numbers within too narrow a compass. 1. The force of the air or wind is a principal one among such agencies, and several circumstances in the structure of plants favour its operation: thus they are elevated and as it were exposed to its action upon stalks, while the seed-capsules open usually at the apex. And as to the seeds themselves, many of them are almost as fine and as volatile as the pollen or dust of the anther itself, and thus no place can be closed to the access of the fungi producing mouldiness, transported by the winds. Heavier seeds are supported by wings, which also waft them along. The seed-vessel of the elm is surrounded by a circular membranous wing; that of the ash is terminated by one that is oblong. The seed-vessels of the maple have two large side-wings; those of the fir, the cedar, and the larch are furnished with a wing of great fineness. The seeds of syngeneseous plants are furnished with a feathery crown or aigrette, and look like small shuttlecocks. The separate threads that compose this aigrette distending as they dry, serve as levers to lift the seed from the involucre that holds it, and, when out, as a parachute to prevent it coming to the ground, and to buoy it in the air. A familiar and beautiful example presents itself in the seeds of the thistle and dandelion sailing along supported by their little tufts. Linnæus suspects that the Erigeron Canadense came through the air from America to Europe. The little cord which attaches the seeds of the dog's-bane, swallow-wort, periploca, &c. to their receptacles, and the calyx of several of the valerians and scabies, form elegant aigrettes. Seeds may be carried by eddies of wind very far from the spot where they originally grew. Whirlwinds have been known to scatter over the southern coast of Spain those that had ripened on the northern coasts of Africa.

2. The waters are another great means for the transportation of seeds. Those of them whose capsules are firmly closed may be carried immense distances by torrents and rivers, or by the sea itself. Cocoa-nuts, cashew-nuts, and the pods of the *mimosa scandens*, sometimes of the length of two yards, with many other fruits of the tropical regions, are cast upon the shores of Norway, in a state to vegetate did the climate permit. Regular currents transport the large double cocoa-nut of the Sechelles to the coast of Malabar, at the distance of four hundred leagues from whence it was produced. Fruits brought by the sea have sometimes discovered the existence of unknown lands to the windward. By such tokens Columbus, in the search for the American continent, was apprised that he was not far distant from the land of which he had prognosticated the existence. Linnæus has some interesting observations upon this subject. "In Lapland we see the most evident proofs how far rivers contribute to deposit the seeds of plants. I have seen Alpine plants growing on the shores frequently thirty-six miles distant from the Alps. . . . . The centaury is a German plant, whose seeds being carried by the wind into the sea, the waves landed this foreigner upon the coasts of Sweden. . . . . Many have imagined, but erroneously, that seed corrupts in water, and loses its principle of vegetation. Water at the bottom of the sea is seldom warm enough to destroy seeds; we have seen water cover the surface of a field for a whole winter, while the seed which it contained remained unhurt, unless at the beginning of spring the waters were let down so low by drains that the warmth of the sun-beams reached to the bottom: then the seeds germinated, but presently became putrescent: so that for the rest of the year the earth remains naked and barren. Rain and showers carry seeds into the cracks of the earth: streams and rivers, which last, conveying them to a distance from their native places, plant them in a foreign soil."

3. Animals co-operate in an extensive degree in the dispersion of the seeds of plants. The squirrel and cross-bill are both very fond of the seed of the fir; to open the scales of the cones, they strike them against stones, and thus set free and disperse the seed. Birds swallow the berries, of which they digest only the pulp, but void the stones entire and ready to germinate. It is thus that the thrush and other birds deposit the seed of the misletoe on the trees where it is found; and indeed, destitute as this is of wings or aigrettes, it could not be disseminated in any other way, for it will not grow on the ground. The pocan or poke of Virginia (Phytolacca decandra), which was introduced by

the monks of Corbonnieux into the neighbourhood of Bordeaux, for the sake of colouring the wine, has been since disseminated by the birds throughout the southern departments of France and in the deepest valleys of the Pyrenees. The Dutch, with the view of monopolising the trade of nutmegs, extirpated the trees on those islands which they could not watch so narrowly as the rest; but in a short time these very islands were re-stocked with nutmeg-trees by the birds, as if nature refused to admit of such an encroachment on her rights. Granivorous quadrupeds disseminate the seeds they do not digest. The newly manuring a field will cause innumerable weeds to spring up, which did not exist there before. The hoards of fruits or seeds (for fruits are but the envelopes of seeds) which various animals make, such as crows, rats, dormice, &c., are frequently forgotten, or, by the destruction of the animal, neglected and lying dormant where they were placed during the winter, germinate in the spring. The fruit of the prickly-seeded scorpion-grass, of clovers or goose-grass, of the wood-sanicle, are all provided with small hooks by which they lay hold of the fleeces of sheep, cattle, &c., and are thus carried with them. Linnæus enumerates no less than fifty genera armed in this way.

There are particular plants, such as the pellitory of the wall, the nettle, and the sorrel, that may be said to seek the society of man, and actually to haunt his footsteps. They spring up along the wall of the village, and even in the streets of the city: they follow the shepherd, and climb the loftiest mountain with him. "When young," says M. Mirbel, "I accompanied M. Ramond in his excursions in the Pyrenees, where that learned naturalist more than once pointed out to me these deserters from the plains below; they grew on the remains of ruined hovels, where they kept their station in spite of the severity of the winters, and remained as memorials to attest the former presence of man and his flocks."

4. Seeds often assist as it were in their own dispersion. In the balsam, the catchfly, fraxinella, sand-box-tree, &c., the valves of the seed vessels open with a spring that projects the contents to a distance from the parent plant. The gourd of the squirting cucumber, by a contraction which takes place at the moment of its fall, darts out the seed along with a corrosive fluid by a vent formed as it quits the stalk. The pouch which contains the seed of the wood-sorrel, on the termination of its growth, bursts, and shoots out the seeds by an elastic movement. Among the mushroom tribes, some of the species of peziza impart a vibratory motion to the cap or cover which bears their seed when that is ripe. Puff-balls burst at the top like the crater of a volcano; and the seed is in such quantity, and so fine, that when it escapes it has the appearance of a volume of smoke. The capsules of ferns, contracted while ripening, open with a spring. A like cause gives motion to the cilia or inner fringe which surrounds the urns or seed-vessels of mosses. Linnæus enumerates fifty genera whose seeds are dispersed by some of the means to which we have just alluded. He also mentions another very remarkable mode in which they sometimes assist their projection. "The crupina, a species of centaury, has its seeds covered with erect bristles, by whose assistance it creeps and moves about in such a manner, that it is by no means to be kept in the hand. If the bearded-oat after harvest be left with other grains in the barn, it extricates itself from the glume. Hence the Dalecarlian, after he has cut and carried it into the barn, in a few days finds all the glumes empty, and the oats separate from them; the spiral arista or beard of the oat is contracted in wet and extended in dry weather; when it is contracted, it drags the oat along with it, for as this is bearded with minute hairs pointing downward, the grain necessarily follows it. The seeds of the equisetum or fern, viewed upon paper through a microscope, seem to be endowed with a description of leaping movement."

Distances, chains of mountains, rivers, the sea itself, are unavailing barriers to the migration of seed. Climate alone can set bounds to the dispersion of the vegetable races. In process of time it is probable that most of the plants which grow within the same parallel of latitude will be common to all the countries comprised in the entire zone of it; an event which would be one of the great blessings resulting from the industry and persevering intercourse of civilised nations. But no human power will ever force the vegetable of the tropics to endure the climate of the poles, nor *vice versâ*. Here nature is too strong for man. Species cannot spontaneously spread themselves from one pole to the other, the intermediate differences of temperature preventing such progress; but we may assist in transporting them, as we have done successfully in various instances. We have already transplanted the eucalypti, the metrosidera, the mimosas, the casuarinæ, and other plants of Australia into our own soil, while the gardens of Botany Bay are stocked with the fruit-trees of Europe. A similar mutual interchange of the vegetable productions always promotes the progress of that civilization of which it is one of the effects.

M. Mirbel concludes his paper with the following passage:—

"The dissemination of seeds completes the round of vegetation. The shrub and the tree are bared of their foliage: the herb is dried up, and returns to the earth from which it came. That earth appears to us as if stripped for ever of her gay attire, yet countless germs await but the stated season to re-adorn her with verdure and bloom. Such is the prodigal fertility of nature, that a surface a thousand times the extent of that of our whole globe would not suffice for the seed-harvest of a single year, provided the whole was suffered to re-appear; but the destruction of seed is endless, and only a small portion escapes to rise again. In no way in our view are the power of nature and the immutability of its laws more strikingly displayed than in the successive resurrections of the types of bygone generations."

Beauty of Shells.—We admit that shells are beautiful, and that they are admirably adapted to the exigences of the wearers; but how shall we account for the endless diversity of shades and colours, varying from the sober coating of the garden snail, to the delicate and glowing tints which are diffused over some of the finer species, in the infinite profusion of undulations, clouds and spots, bands and reticulated figures, with which these admirable architects enrich the walls of their beautiful receptacles. The means of producing them must be sought for in the animals themselves. Their necks are furnished with pores replete with colouring fluid, which blends insensibly with the calcareous exudation already noticed, and thus occasions that exquisite variety in their testaceous coverings, which art attempts to emulate, but can never fully equal. Thus far is the result of observation and experiment. It now remains to account for the extraordinary fact that the stony exudations of testaceous animals condense only on those parts where they are essential to their welfare. But here investigation ends—the microscope has done its office. It seems as if maternal nature delighted to baffle the wisdom of her sons, and to say to the proud assertors of the sufficiency of human reason for comprehending the mysteries of creation and of Providence, "Thus far can you go, and no farther; even in the formation of a shell, or its insignificant inhabitant, your arrogant pretensions are completely humbled."—*The Conchologist's Companion, by Mary Roberts.*

[*a*, Wild Boar; *b*, old unimproved breed; *c*, black or wire haired breed; *d*, Boar of the improved breed; *e* sow and young of improved breed; *f*, Suffolk breed; *g* Chinese breed.]

THE HOG.

As is the case with all our domesticated animals, the hog has undergone various modifications of size and contour, and has diverged into different breeds (the consequence of judicious selections by the breeder, and of different modes of feeding).

It cannot be doubted that the wild hog, once common in our island, and still abundant in many districts of continental Europe and Asia, is the origin of our domestic race, at least if we except the Chinese breed, which some naturalists, and among them Fred. Cuvier, consider to be derived from a distinct stock.*

The wild hog, when fully grown, is a formidable animal; and its strength and ferocity render it more than a match for the strongest dog in single combat. The savage nature of the wild race is by no means extinct in the domestic breed: we have seen boars and aged sows which it was dangerous to approach, and we have known instances in which they have attacked and wounded even the persons who attended to them. In the New Forest, where troops of semi-domesticated hogs, closely approaching the wild race in form, wander at large, these animals display great activity and spirit; they resolutely defend themselves against dogs, and when excited are even ready to rush upon any person who ventures too near them. The dog seems to rouse the anger of the hog more than any animal; and this more particularly when the hog is only semi-domesticated, as in the New Forest or in the woods of Sweden. Mr. Lloyd, in his 'Field Sports,' particularly alludes to this circumstance, and

describes the fierceness and resolution of the Swedish hogs, which, whenever they caught sight of his dogs, rushed upon them; and on one occasion, when he with some difficulty saved a brace of pointers from an infuriated sow, he was himself placed in great jeopardy; she resolutely attacked him, nothing daunted by several wounds received from a spear which it was necessary to employ in self-protection.

The importance of the domestic hog in an economic point of view is appreciated by all. In the rearing and feeding of this animal, and in the preparation of its flesh and fat by the processes of salting and drying, capital to a considerable amount is involved. Its flesh is also used in a fresh state; and most agree that young pig is one of the delicacies of the table. It was esteemed as such by the epicures of ancient Rome.

"Much of the value of the hog," says the writer of the third volume of 'Menageries,' "results from the constitutional predisposition of its race to the deposition of a layer of unctuous fat between the skin and muscles, which fat is termed lard, in contradistinction to suet or to oil, and to the readiness with which that unctuous fat becomes impregnated with saline particles. In this respect indeed it differs materially from suet, whether of the ox or sheep, and also in the proportions of its chemical constituents. In 100 parts of hog's lard there are 38 parts of stearin, and 62 of elaïn. In the fat of the sheep the stearin is in much greater proportion, as it is also in the suet of beef, of which three-fourths consist of stearin: hence the suet of the sheep and ox is well adapted for various domestic purposes, and among them the manufacture of candles, for which the lard of the hog is useless."

Our Saxon forefathers fully appreciated the value of the hog; its flesh was, in fact, the staple food of every household, and the wealthy possessed large herds, which, under the care of thralls, or villains, were driven into the woods, there to feed on acorns or mast, as is the case at present in Portugal. The right of pasturage for hogs was claimed under certain conditions, and might be conveyed by deed. In an ancient Saxon document we read, "I give food for 70 swine in that woody allotment which the countrymen call Wolferdenlegh." In the Saxon times, it is probable that the domestic, or rather, semi-domestic hog, closely resembled, both in aspect and habits, the wild race, then a native of our forests; as was the wolf also, against which the boar and the sow would have to defend themselves and their litter. They were a large and powerful breed, to which the hogs in the New Forest in the present day make the nearest approach. After the Norman conquest, the hog was comparatively neglected. The lands which the Saxons had won by the sword were now seized by the Normans, who, accustomed to a higher state of refinement than that existing among the Anglo-Saxons, despised their gross fare and the hogsflesh which they so largely used. Hence the numbers kept would diminish, and the breed would deteriorate from want of care and attention. The old unimproved hog, with a long lank body and large pendant ears, till lately common in England, and still more lately in Ireland, may be regarded as the degenerate descendant of the race neglected after the Norman conquest. The Normans despised agricultural labours as a pursuit; and the nobles and barons divided their time between war, hunting, and hawking. They expended but little capital on improvements in farming, against which indeed, had they ever so sedulously attempted them, foreign wars and the crusades, as well as continued international contests between rivals for the throne, would have militated. Had the knowledge been possessed, the power of carrying it into operation would have been wanting. The amalgamation of the jarring elements of the body politic, and the subsequently rapid elevation of England in a commercial point of view, gave to the land a value before unknown, and stimulated its holders to every kind of improvement, whether connected with agriculture or the rearing of live-stock. Since the time of Elizabeth, our races of sheep, cattle, horses, and even swine have become modified, and various breeds have been established, the results of judicious selection and care in rearing. The old unimproved breed of swine is now seldom or never seen. On the contrary, we find that various counties have their own peculiar but at the same time highly improved race; some remarkable for the delicacy and excellence of their flesh, some for their size and contour, and the readiness with which they may be reared and fattened.

Hampshire and Berkshire are each celebrated for a fine breed, individuals of which often attain to extraordinary dimensions. One of the Berkshire breed which was killed at Congleton, Cheshire, is reported by Mr. Culley to have measured, from the nose to the end of the tail, three yards eight inches, and to have stood four feet and a half in height: its weight, when killed, was 86 stones 11 pounds avoirdupoise.* Size, however, is of minor importance; and since the introduction of the Chinese race, which has tended to the improvement of our native breeds, we less frequently hear of instances of enormous magnitude than formerly.

The Chinese hog is of small size, with a deep round body, full round haunches, a short thick neck, erect ears, and a short and abruptly sharpened snout. The limbs are short, with small bones and compact toes; the prevailing colour is black, or half black and half white. The flesh is remarkable for its delicacy. This breed, or one closely related to it, extends from China throughout the various groups of islands in the South Pacific.

Excellent as the flesh of the Chinese hog is, and of the breeds crossed with it, preference is given to some of our native improved breeds, as yielding the best bacon and hams. Of these the Berkshire, Hampshire, Suffolk, and Yorkshire breeds are highly esteemed.

The Irish hog remained till lately very much neglected, and was a thin, long-bodied, flap-eared animal. Of late years, however, owing to judicious crossing with our improved breeds, it has become greatly modified for the better, in the form, the quality of the flesh, and the facility with which it is fattened.

In the Orkneys and Hebrides a small stunted breed of pigs exists: the animals are left to themselves, and wander about the hills in search of a precarious subsistence. Occasionally they commit extensive depredations upon corn-lands and cultivated patches. These pigs are clothed with long bristles, which are used in the making of the ropes with which the fowlers are let down over the precipices of the rocks in quest of the young and eggs of the various sea-birds which make those giddy steeps their breeding-place. The flesh of these small hogs is generally lean and ill-flavoured, but it is said that if the animals were properly managed, it would be excellent, and make good bacon.

Much has been said respecting the advantages and disadvantages of keeping and rearing pigs: that the cottager whose garden produces sufficient refuse vegetable matter for the keep of one or two of these animals, with the exception of what is requisite for fattening, will derive profit from them, we cannot doubt. Nevertheless, it is greatly doubted by many competent judges whether swine form a profitable stock when fed on food which requires to be raised for the purpose; it is in connection with dairies, breweries, distilleries, and other large establishments, where offal food is abundant, that their importance is palpable; for they

* The old stone of 14lbs. is here meant, the weight being 1215lbs.

return, for the offal which they consume, and which would otherwise be wasted, a clear and considerable profit. In short, local circumstances must in a great measure determine the advantages or disadvantages attending the breeding and feeding of swine; and it is impossible either to lay down rules of general application or to describe a practice which necessarily varies in almost every district.

The sow carries her young for sixteen weeks; the pigs are usually weaned when about six or eight weeks old, and a couple of litters are generally produced each year: sometimes, indeed, five litters are produced within two years; but this is a rare occurrence. The following particulars should be attended to in the breeding of swine, namely, that the sow should not produce her litter in winter, as the young are delicate, and do not thrive during the cold weather; and also that the same should not occur when food is scarce, as is the case for the most part on corn-farms during summer. The months of February and August have been recommended as the most proper. The sow brings forth at each time from nine to twelve, or even fifteen young; hence, as Buffon observes, the sow forms an exception to two of the general rules of nature, that the largest animals are the least prolific, and that digitated quadrupeds produce the most numerous young. No other pachydermatous animal (as the elephant, rhinoceros, tapir, &c.) produces more than one, or at most two, at a birth. According to Azara, the peccary produces two at a birth, and only once a year. It is, however, probable that the hyrax, which in many respects resembles a rabbit, may also be an exception.

For the purpose of comparison, a figure of the wild boar, of the old unimproved breed of England, of the improved breed (a boar, sow, and young), of the black breed, of the Suffolk, and of the Chinese breeds, are given in the cut at the head of this article.

THE THERMOMETER.

[Concluded from page 232.]

From that time experiments in great abundance were made to ascertain what was the best liquid to employ, and what was the most convenient scale by which one temperature could be compared with another. Some used spirit of wine coloured with cochineal: some proposed linseed oil; others water: but the body which, all things considered, has proved most fitted for this purpose is mercury, the only metal which remains liquid at ordinary temperatures. Mercury enlarges in bulk more equably for equal increments of heat than most other bodies; it is more easily freed from air than either oil or alcohol, a quality of much importance in the construction of thermometers; it has a very convenient range, for while oil becomes viscid and tenacious at low temperatures, and alcohol boils before we can attain a high temperature, mercury retains its liquidity throughout a wide extent of change; and lastly, it accommodates itself to the temperature of surrounding bodies more readily than most other liquids. All these qualities pointed out mercury as the liquid best fitted for thermometers; and by the exertions of Réaumur and Fahrenheit, the construction of these instruments was brought to a point of much excellence. Fahrenheit, in order to make his instrument useful as a measurer, divided the stem, by marks on an attached frame, into a number of equal parts. He immersed the bulb containing the mercury in a mixture of snow and salt, which he erroneously thought would produce the most intense cold possible; then made a mark to indicate the height to which the mercury sank in the stem; then immersed the instrument in boiling water, and made a similar mark higher up. These two heights he made the limits of a scale, by dividing the difference between them into two hundred and twelve equal parts, called degrees (of which the symbol is °), making the lowest, or *zero*, =0°, and the highest = 212°. He afterwards found that when the bulb was immersed in melting snow or ice, the mercury remained at the level marked 32°; and from this circumstance we have been and still are accustomed to say that 32° is the freezing-point of water, for the thermometer gives the same indication when water is freezing as when ice or snow is melting.

When subsequent experiments showed that a much lower temperature than Fahrenheit's zero can be produced, it was necessary to have other degrees to indicate it, and these are preceded by the subtractive sign —. The thermometer of Réaumur, and that called the Centigrade, were afterwards constructed, differing from Fahrenheit's chiefly in the gradation of the scale. In Réaumur's the freezing-point is marked 0°, and the boiling-point 80°: in the Centigrade the freezing-point is 0°, and the boiling-point 100: so that two and one-fourth of Réaumur, or one and four-fifths of the Centigrade, are equal to 1° Fahrenheit. Fahrenheit's scale is used in England, the Centigrade in France, and Réaumur's in some other parts of Europe. In reading French books wherein temperatures are mentioned, the scale employed is that of the Centigrade thermometer: and the corresponding degrees of Fahrenheit may be deduced therefrom by remembering that 0° of Centigrade is the same temperature as 32° Fahrenheit, and that a degree of Fahrenheit is equal to five-ninths of a degree of the Centigrade. To convert a Centigrade indication to one of Fahrenheit, therefore, we multiply by 9, divide by 5, and add 32°. To perform the reverse operation, we subtract 32°, multiply by 5, and divide by 9. If Réaumur's thermometric indications are to be reduced to those of Fahrenheit: as 0° Réaumur is equal to 32° Fahrenheit, and as one degree of Fahrenheit equals four-ninths of a degree of Réaumur, we multiply by 9, divide by 4, and add 32°: and for the reverse operation, we subtract 32°, multiply by 4, and divide by 9. It will thus be found that—

41° Fahr.	equals	4° Réau.	or	5° Cent.	
50°	„	8°	„	10°	„
59°	„	12°	„	15°	„
68°	„	16°	„	20°	„

Confining ourselves to Fahrenheit's thermometer, then, we find that it is simply a glass bulb and tube containing mercury to a certain height, which mercury, by the existence of a vacuum above it, is free to obey the expansive tendency which heat imparts to it: and by drawing marks on the wooden stem to which the tube is attached, to indicate the height to which the mercury rises when exposed to certain well-known heats, the instrument becomes a heat-measurer for future use.

The precautions necessary to be observed in constructing a thermometer we shall not enter upon, for they constitute a delicate branch of instrument-making.

When a thermometer is placed in the open air, the mercury speedily attains the same temperature as the air, in obedience to the law which regulates the diffusion of heat. The heat affects the mercury through the glass passing to or from it, according as the mercury is colder or warmer than the air when first exposed to it. As to the actual *quantity* of heat which a given bulk of mercury contains, we are totally ignorant of it; all we know being that different substances have different capacities for heat, some requiring more heat than others to bring them to a given temperature.

Thus, if the quantity of heat necessary to raise pure water through 1° of temperature be expressed by 1000, then 33 will express the quantity necessary to

raise the temperature of mercury one degree; or, in other words, mercury expands thirty times more readily than water, when placed in similar circumstances, and is thus a much more convenient liquid for thermometers than water.

Some thermometers have been constructed so that they may leave a record of the highest and the lowest temperatures which have occurred during a period when the observer could not attend the instrument. A double thermometer, of mercury and of alcohol, is provided with little bits of enamel or of steel, in such a manner that these shall remain stationary at the two extreme points of temperature which may have occurred during the absence of the observer. Rutherford, Six, Forbes, and others have constructed these register-thermometers of various forms.

For all temperatures between the freezing and the boiling points of mercury (−39° and +662°), a mercurial thermometer is that which is most conveniently employed; but for lower temperatures the thermometric liquid is generally alcohol, which has never yet been known to freeze. On the other hand, for very high temperatures, the expansion of solid bodies, instead of liquids, is made the means of measuring temperatures, as every fluid would go off into vapour. Such instruments are called pyrometers (fire-measurers), in which the expansion of a rod of metal at high temperatures is very accurately measured.

It will be readily understood that the object of using a thermometer in meteorological observation is not to determine the actual amount of heat in the air, but only the changes in the amount. Tables are given in various works, indicating the average temperatures in different countries,—at noon, at night, in summer, in winter, in sunshine, in shade, &c. But all these are merely intended as means of comparison with other indications obtained elsewhere, or at other times, with a view of deducing, if possible, some laws which will explain the true part which heat performs in the production of atmospherical phenomena. All the tables of temperature kept by the Royal Society and other scientific bodies; all the directions on this point given to Sir James Ross and other scientific travellers; all the thermometric averages given in our best almanacs, generally for the city or town where they are published, are intended as comparative data, from whence future truths may perhaps be gleaned as to the diffusion of heat in the atmosphere, but not as indications of the actual amount of heat present therein. In this point of view the term "thermometer" is somewhat unfortunate, for we cannot, correctly speaking, measure the heat in a body; we can only measure the effect which it produces in altering the dimensions of the containing body.

The Cross-Timber District in Texas.—The Cross Timber is a continuous series of forests, extending from the woody region at the sources of the Trinity, in a direct line north, across the apparently interminable prairies of northern Texas and the Ozark territory, to the southern bank of the Arkansas river. This belt of timber varies in width from five to fifty miles. Between the Trinity and Red River it is generally from five to nine miles wide, and is so remarkably straight and regular, that it appears to be a work of art. When viewed from the adjoining prairies on the east or west, it appears in the distance like an immense wall of woods, stretching from south to north in a straight line, the extremities of which are lost in the horizon. There appears to be no peculiarity in the surface of the ground over which the Cross Timber passes, to distinguish it from the surface of the adjoining country; but, where the country is level, the region traversed by the Cross Timber is level; where it is undulating, and where it is hilly, that also is uneven, conforming in every respect to the general features of the adjoining country. The trees composing these forests are not distinguishable by any peculiarity from those which are occasionally found in the adjoining prairies, or in the bottoms bordering the streams which intersect the Cross Timber. Oak, hickory, elm, white oak, post oak, holly, and other trees are found in it. The elm is often found growing luxuriantly far from any stream, and in apparently poor and sandy soil. The black jack, a species of oak, is met with throughout its whole extent, from the Arkansas to the "Black Jack ridge" at the sources of the Trinity. The Cross Timber, in its general direction, does not perceptibly vary from the true meridian. Dr. Irion (formerly secretary of state of the republic), a few years since accompanied a party of surveyors, who measured a line extending forty miles due south from the bank of Red River, near the Cross Timber, and found, to their surprise, that the western border of the Cross Timber continued parallel with this line through the whole distance. As might naturally be supposed, the Cross Timber forms the great landmark of the western prairies; and the Indians and hunters, when describing their routes across the country, in their various expeditions, refer to the Cross Timber as the navigators of Europe refer to the meridian of Greenwich. If they wish to furnish a sketch of the route taken in any expedition, they first draw a line representing the Cross Timber, and another representing the route taken, intersecting the former. Thus a simple but correct map of the portion of country traversed in the expedition is at once presented to view.—*Kennedy's Texas.*

Metropolitan Vehicles.—It is very difficult to conceive a London without an omnibus or a cabriolet. Yet who amongst us does not remember the hour when they first appeared. For some two hundred years, those who rode in hired carriages had seen the hackney-coach passing through all phases of dirt and discomfort; the springs growing weaker, the 'iron ladder' by which we ascended into its rickety capaciousness more steep and more fragile, the straw litter filthier, the cushions more redolent of dismal smells, the glasses less air-tight. But it is of little consequence. Nobody rides in them. The gentlemen at the "office for granting licences for carriages plying for hire in the metropolis" tell us that licences are still granted to four hundred hackney-coaches. Alas, how are the horses fed? Are the drivers living men who eat beef and drink beer? We doubt if those huge capes ever descend to receive a fare. Are they not spectre-coaches—coachmen still doomed to sleep upon their boxes, as the wild huntsman was doomed to a demon-chase—for propitiation? The same authority tells us that there are fifteen hundred cabriolets to whom licences are granted. These we know are things of life. They rush about the streets as rapid as fire-flies. They lame few, they kill fewer. They sometimes overturn us; but their serious damage is not much. We borrowed them from the French on a fine May morning in the year 1820. It is remarkable how slow we are in the adoption of a new thing; and how we hold to it when it is once adopted. In 1813 there were eleven hundred and fifty cabriolets upon the hackney-stands in Paris—"Cabriolets de place,"—and we had not one. Now, we have fifteen hundred of them.—*London, No. 2.*

The Fate of Velleia.—In 1760 an exceedingly curious discovery was made close to the base of the Apennines, between Parma and Piacenza. At a village called Macinesso, overshadowed by steep hills, the finding of a few antiques tempted the Duke of Parma to excavate; and, at a depth of many feet, covered by successive layers of soil and rocks, were disinterred the remains of an extensive town, to which its inscriptions gave the name of Velleia. It had perished by a landslip, supposed to have occurred in the fourth century; and the number of skeletons that lay among the ruins showed that the catastrophe, which piled the first strata above the unhappy town, had been sudden and fatal. But the ancient writers are alike silent on the history of Velleia and on its fate: its antiquities also are mere fragments; and these causes, joined to the remoteness of the place from the great roads, have been the excuse of travellers for generally neglecting it.—*Edinburgh Cabinet Library, No. XXIX.: Italy and the Italian Islands, Vol. I.*

Mutual Support.—The race of mankind would perish, did they cease to aid each other. From the time that the mother binds the child's head, till the moment that some kind assistant wipes the death-damp from the brow of the dying, we cannot exist without mutual help. All, therefore, that need aid have a right to ask it of their fellow-mortals: no one who holds the power of granting can refuse it without guilt.—*Sir Walter Scott.*



[Virgin and Child.—Vandyke.]

GRATUITOUS EXHIBITIONS OF PICTURES.

DULWICH COLLEGE.

The long residence of Vandyke in England, his representations of many of our most eminent warriors and statesmen, and of the beautiful women of the court of Charles I., have rendered his name as universally known among us as have the grace and purity of his style commanded our admiration and convinced our judgment. Patronised, in its most exalted sense, by the royal and the noble, employed by the affluent, and courted by the lovely, Vandyke abandoned nearly his whole time to the exercise of portrait-painting. But his deep reverence for the only painter in the world who in portrait has surpassed him, Titian, prompted him to ponder well on the wonderful power of his colouring, whilst the admiration he felt for his own illustrious preceptor, Rubens, and the applauses which that great painter's gorgeous imaginings drew forth from his contemporaries, would not permit the ardent mind of Vandyke to remain content with excelling in portraiture alone. The Crucifixion for the church of the Recolets at Mechlin, and the Elevation of the Cross for the collegiate church of Courtray, are sufficient to prove that his studies on the colouring of the great Venetian, and his contemplation of the expansive richness of the Fleming, had produced the fruit which might be expected from so highly cultivated a mind and so skilful a hand. Of the former work no less an authority than Reynolds has declared that it, "upon the whole, may be considered as one of the finest pictures in the world, and gives the highest idea of Vandyke's powers; it shows that he had truly a genius for history painting, if he had not been taken off by portraits." The latter, though undervalued, nay, scorned by its present possessors, has been acknowledged to be in every respect a masterpiece in the great essentials of art.

Passing over for the present moment the practice of individualising followed by the Flemish painters in

their Scriptural and poetic subjects, we come now to remark upon the Madonna and Infant Saviour, from which Mr. Jackson has executed the above wood-engraving. This picture is one of the few Scriptural subjects by Vandyke in England, but whether executed during his residence in this country does not appear. Most probably it was not. The more striking beauties of the performance are the exquisite expression of the face of the Virgin, the mixed intellectuality and infantine sportiveness in the countenance of the Redeemer, the graceful disposition of the drapery, the excellent arrangement of colour, the management of the lights and darks, and the beautiful drawing of the extremities, that is, of the hands of the two figures and of the feet of the Saviour. The defects appear to be two, firstly, the affectation in the action of the figure of the child, and secondly, the want of drawing in the neck of the Madonna. One fault, and the greatest admirers of the work must admit it to be so, disturbs the repose of the whole composition, for the strong action of one figure is inconsistent with the quiescence of the other; its flippancy of attitude injuriously contrasts with the sublime repose of the Madonna. This is a solecism in taste. The other defect has arisen from an inattention to academic accuracy. The neck of the Virgin, instead of forming a graceful undulation from the shoulder upwards, as it would in nature, were the head thrown over in the manner here depicted, forms, in the first instance, too straight a line, and then too suddenly and abruptly joins the line of the chin and of the cheek.

If, as has been justly observed of the look of grief and resignation in the Virgin in the Crucifixion, that "it is above all praise"—yet we must admit that the aspect of sublime purity in the raised eyes, and in the all but breathing lips of the immaculate mother in the picture under our notice, are worthy of the highest encomium. The head of the infant Christ, too, possesses a rare combination of divine intellect and of beautiful humanity—the colouring of the whole picture is rich, harmonious, and clear, and the flesh tints happily relieved from the contrasting blue and red drapery, without any violence to propriety or a sacrifice of truth.

We have been thus diffuse in speaking of this individual work, because we have seldom opportunities of beholding any pictures by Vandyke except his portraits, and more so because there are two specimens of this very composition in England by him. The other formed part of the collection of the last duke of Bridgewater, and is now in the possession of Lord Francis Egerton. The artist thus repeating his own idea is some proof that he considered his conception of the subject just, and it matters little whether this be the first, and the Bridgewater picture the second work, or whether the converse be the truth—it is clear that he thought the expression so just as to warrant his repeating it; and thus we have a picture stamped by the distinguished painter's own approbation. If he painted the Bridgewater picture first, we may fairly conclude that he made such alterations in this as might suggest themselves to him, to make it still more perfect; or on the other hand, if this be the original, then we have a right to consider that he was entirely satisfied with it, or he would not have gone over the same ground a second time. There is a third supposition, namely, that Vandyke was commissioned to repeat his work, and if so, it is evidence that his and our own time concur in awarding to the picture their united tribute of applause.

Of a composition so simple in its construction, and consisting of a group of only two figures, detailed description is wholly uncalled for; but we may profitably point out the want of ideal beauty in the representation of the Madonna. True it is that in the painting of Vandyke we find a greater portion of that ideality than in any other works of the Flemish school, yet even his conception of the figure, graceful as it is, is far beneath that purity which we seek for and assuredly find in the pictures of Raffaelle. That the productions of the pencil of Vandyke vary from those of the "prince of painters" we do not object, for there are others and illustrious artists who have varied from him as much as has Vandyke, but what we do object to is the style of common, individual, and Flemish life which pervades the figure of the Virgin. We cannot help thinking that, although it be necessary in painting this subject to adhere strictly to nature in the delineation of the figure and features of Mary, still that the portrait-like appearance of individual life should be scrupulously avoided, and that, although the figure and features should be of earthly mould, and form, and texture, still they should bear the impress of the very highest class of human conformation. Measured by this standard, if it be a true one, the figure in the above work will be found to be in an essential degree defective. It conveys a notion of actual individual though beautiful Flemish life, not an abstract idea of the highest perfection of human purity.

The life of this distinguished artist possesses considerable interest to the English reader, as connected with the history of painting in this country. Anthony Vandyke, or Van Dyck, was born at Antwerp, in 1599, and, according to Houbraken, was the son of a painter on glass. He studied under Henry van Balen, with whom he made great progress, and then, at his own express desire, became a pupil of Rubens. At an early period of his pupillage under that great painter, Vandyke was entrusted to forward such works as the master was engaged on even to such a point as only required the finishing touch of Rubens, and an anecdote is related which serves to show that Vandyke had early gained great facility in imitating the style of his preceptor. One evening, after Rubens had left his painting-room, his pupils, in a frolic, had the mishap to deface the head of the Virgin Mary and the arm of the Mary Magdalen, in the celebrated picture of The Taking Down from the Cross. Deipenbeck, pushed by one of his fellow-students, was the immediate cause of the mischief. John van Hoech, another pupil, proposed that the most expert of the disciples of the painter should repair the damage, and the lot unanimously fell upon Vandyke, who performed his task with so much success, that Rubens, next morning, pointed out those parts which had been restored as "by no means the worst that he had executed yesterday."

After remaining in this school a suitable time, Vandyke went to Italy, at the advice of his master, being then only twenty years of age. He proceeded to Venice, where he diligently studied the works of Titian, visited Genoa and Palermo, and then for a time fixed his residence at Rome. He returned to his native city, and was engaged to paint his celebrated picture for the church of the Augustines, representing the patron saint in an ecstacy, supported by angels, a work which procured him great fame and the high encomiums of Rubens. He was quickly engaged to paint for the public edifices at Brussels, Mechlin, and Ghent, besides in many others of those of Antwerp, and at the church of Courtray. Among them were the two fine compositions to which we have before alluded, the Elevation of the Cross and the Crucifixion. He now accepted an invitation from Frederick, Prince of Orange, and visited the Hague, where he painted the portraits of that potentate, his family, and of the principal nobility of the court. In 1629 he came to England, in the expectation of being introduced to

Charles I., but, being disappointed, he returned to Antwerp. Two years afterwards he came again to London, invited expressly by the king, and was presented at court by Sir Kenelm Digby. He was lodged at Blackfriars, among the king's artists, and thither the monarch frequently came by water, as well to enjoy the contemplation of the painter's skill as to join in the charms of his conversation. On the 5th of July, 1632, Charles conferred on him the honour of knighthood, and soon afterwards granted him a pension of 200*l.* a year for life. The patent is preserved in the Rolls Chapel, and is dated 1633, and in it Vandyke is styled "painter to his majesty."

The patronage of so refined a connoisseur as Charles I. prompted the nobility to employ this accomplished painter, and England, consequently, abounds with portraits by his hand. He lived in wealth and splendour; and on his death, which happened in Blackfriars, on the 9th of December, 1641, at the early age of forty-two years, he was buried, with extraordinary funeral pomp, in St. Paul's cathedral.

If we consider that the decease of this eminent man occurred in the vigour of his manhood, and only twenty-two years after he had quitted the studio of his illustrious master to travel into Italy, it is a subject of astonishment that he left such numerous works. Deschamps gives a particular account of seventy-seven pictures by him in the churches and public edifices of his native country, and those form a part only of his similar productions. In England his portraits amount to many hundreds, and several of them consist of two or more figures.

AMERICAN NEWSPAPERS.—THEIR APPEARANCE, CHARACTER, &c.

In America, where, almost monthly, new districts of country are becoming subdued, and where the ancient forests but lately covered the entire space, villages and towns spring up as if by magic; and no sooner is a moderate numerical amount of the human race congregated in any *new* locality, than some adventurer in the printing line is attracted from a distant and older settlement, aware that the publisher of a newspaper always ranks among the leading characters of a newly-settled district. This person, who probably has never ranked higher than a journeyman type-setter, on account of the universal credit system, finds little difficulty in establishing a weekly paper in some such new locality as above alluded to, which, to a person without capital, or friends to assist him, would be out of the question in this country,—whereas in most parts of America it is the easiest thing imaginable, and, for the most part, is managed after the manner following. In the first place it is necessary to have a building erected for a printing-office, which some carpenter or other undertakes to do, and as the work is to be performed on a one or two years' credit, thirty or forty per cent. more is agreed to be given than if the money were to be forthcoming on the completion of the job. However, he (the printer) gives the carpenter promissory notes to the amount of the contract, bearing the usual rate of interest; which notes are *traded away*, as the customary phrase is, a dozen times or more before they become due,—not always at the value they bear on their face, but (according to circumstances) at what parties may be willing to receive them at.

But a printing-office is of no use unless supplied with printing-types; and the necessary quantity of old and worn-out types is probably procured (on credit of course), and is forthwith sent to furnish the new printing-office. Hence it is that most of these newly-established papers are not only very indifferently got up, and abound with almost every variety of typographical error or blunder, but the types are of that character to give the whole a blurred and sorry appearance. The quality of the paper is also of a very inferior description; nor do the subscribers, under the circumstances in which most new papers are first published, either desire or expect other than a cheap article. When the individual, who in his own person unites the characters of editor, publisher, and printer, happens to be of industrious and plodding habits, on commencing a weekly journal he provides himself with a couple of boys or apprentices, to whom he professes to teach the art of printing, and without any other aid or assistance he contrives to carry his plans into successful operation. But if he be not a *working* man himself, then he engages a printer, or person who knows something of the compositor's art, to assist in the office, and to instruct the apprentices.

Where the population has arrived at a thriving and increasing condition, there is little difficulty in filling up a list with two or three hundred subscribers' names, for probably in no other country where newspapers exist do the subscribers trouble themselves less about finding the means of paying their newspaper subscriptions when due, than they do in the United States.

The general subscription price of a weekly provincial country newspaper is two dollars (8*s.* 3*d.* sterling) per annum; though some are only one dollar and three-quarters; and a few as low as a dollar and a half, or 6*s.* 2½*d.* a year. A few of these papers advertise no less than three different prices at which they will be furnished to subscribers, namely, *cash* in advance, *credit*, and *trade;* and the difference made between cash in advance and either of the other two is usually very great. The reason scarcely requires an explanation, but it may be remarked, that in new settlements far inland *cash* is usually a very scarce article; the credit system requires no explanation; and by *trade* must be understood farm produce, or such articles as the subscriber may have to dispose of when it might not be convenient for him to raise the cash. Cash in advance usually has a preference of 30 or 40 per cent. over either of the other two.

There are scores of newspapers published in the United States, the subscription lists of which range from two hundred to four hundred. Take the average, that is three hundred, and supposing the subscribers were all to pay their subscriptions, the one-half of them in cash, and the other half of them in trade, the whole would amount to scarcely over 100*l.* per annum. Living is very cheap in the backwoods; but notwithstanding that, this sum would be found insufficient to support the humblest printing-establishment without looking to some other source for an increase of income. In a small village surrounded by a thinly inhabited country, where most of the people are farmers or persons engaged in subduing the forests, at first sight it might be supposed that there would be little done in the way of advertising. This is far from being the case: every one that has got anything, no matter what, to trade in, notifies (to make use of an Americanism) the public thereof through the columns of the newspaper. The parties advertising are rarely satisfied with telling their tale in a simple and straight-forward way, but appear to consider it necessary to puff egregiously, and to make use of bombast and rhodomontade upon the most ordinary occasions. Should there happen to be two or three small stores kept in the neighbourhood, the rival store-keepers are continually advertising goods that they have (or profess to have) from some distant city or place of import, or else informing their customers and others that they are in

want of oats, flour, wool, butter, boards, poultry, &c. The first in the field is sure to be outdone by the second, and the second by the third, for if one advertise a hundred pieces of Manchester goods as just received, his neighbour next week will advertise the arrival of a thousand pieces at his store; while a third party will follow at the next opportunity, and probably assert that he has received one hundred thousand pieces, though in fact not one of the whole triumvirate ever had fifty pieces of these goods in his store at one time. But these advertisers are far from all, although one keeper of a small store will frequently insert half a dozen or half a score advertisements in the same paper in one week; and in order to make the advertised wares the more conspicuous, each of them occupies a different part of the newspaper; for the shoemaker, the blacksmith, the cooper, the carpenter, the hatter, the tailor, and sundry other artisans and craftsmen—if the little community happens to contain such—are among the parties in the most frequent habit of supplying the weekly publications with an account of their respective wants or wishes. It is also a very common thing for traders, as well as mechanics, to make occasional appeals to the individuals indebted to them through the medium of a newspaper; and after doing so for a few times, without making the desired impression upon those to whom the appeal was made, another advertisement probably will announce—that the advertiser *must* have money, and that *this* is the last notice before putting the respective accounts into the hands of the sheriff for collection.

The advertising department is therefore, even in a country village or small town, a source of considerable emolument, even where advertisements are inserted at a low rate, which is the case with such publications as are here alluded to. But it should also be understood, that nearly the whole community of advertisers expect to pay in *kind* (if they ever pay at all) for the insertion of their advertisements; and should some of this class of patrons of a newspaper have nothing to tender in payment that the printer can by possibility make use of himself, he is generally under the necessity of accepting whatever such persons are willing to turn out to him, as they express it, which he has to dispose of in the best way he can. He therefore seldom finds much difficulty in maintaining himself and his family, if he have one, for his subscribers and advertising patrons find little difficulty in supplying him with provisions, stores, fuel, and all the necessaries of life; but the great difficulty lies in procuring the amount of cash that is absolutely necessary to carry on his business with, for there are but few things in a new settlement that the people trade in, one among another, which can be converted into cash without a considerable loss on the original value of the article, or at a considerable degree of expense and trouble.

In one of those American provincial newspapers there usually is but a very small quantity of editorial composition, since, for the most part, the backwoods editors content themselves with quoting the political opinions of writers that have been more accustomed to the business than themselves, though they are not always honest enough to acknowledge the obligation by referring to the source from whence they draw their extracts. And hence it is that many a newspaper editor gains the reputation with his readers and subscribers of being "a smart man" (*i.e.* writer), when the merit they consider him entitled to belongs to others. A newspaper of this character is easily got up. The sheet, in the first place, is a very small one, while the type is comparatively large; and as the advertisements are spread over as much space as possible, there only requires as many cullings from other papers as will fill up the spare space. Most persons dealing largely in advertising, agree with the editor for so much by the year; hence it is no uncommon thing to find some of these people's advertisements standing in type from one end of the year to the other, which is a saving of time to the compositor. Some of the advertisements—in order probably to attract more notice—are placed upside down, while others are placed lengthwise in the columns; and in order to make them look as imposing as possible, small wood-engravings, wretchedly executed, of men, dogs, cattle, houses, &c., are inserted wherever there seems a chance of their not being notoriously out of place.

From what has been said, the reader will be able to comprehend, generally, the appearance of an American newspaper, such as is commonly seen in the new settlements. Politics being a leading feature in all American journals (the annual elections and other political movements creating a constant political excitement), the editor or conductor of a newspaper, of the very lowest order, is looked upon, in the little sphere in which his paper circulates, as a leader of one or other political sect or party; and if he be fortunate enough to advocate the cause of the successful candidates for office, it is understood that this advocacy entitles him to the consideration of the successful party, and that he is fairly entitled to some place or office to which a salary is attached, as binding him to his party, and by thus extending his means, putting him in a situation of effecting still more in future party struggles.

In the populous and commercial towns and cities, the newspapers have a very different appearance from those issued from the offices of the backwoods editors. In New York, Philadelphia, and several other cities, there are several papers published daily, others semi-weekly, and others weekly. Many of them are of a large size, and the general appearance respectable: but for the most part the quality of the paper is not equal to that of our English newspapers. The same propensity for general advertising prevails in the cities that has been noticed as existing in country towns and villages, but with this difference—in the cities the advertisements are so very numerous, that very small types are used, and the matter reduced into the smallest space possible; and although some of our English newspapers (the *Times* for instance) presents us with a vast number of advertisements daily, some of the leading commercial papers in New York and elsewhere manage to cram more advertisements into one page than appear in any two pages of our largest journals. Most of the merchants pay by the year, and hence the necessity for the publisher finding room for all that may be sent to his paper for insertion.

Though a very large portion of most of the leading American journals is devoted to advertisements, the editorial departments are under the management of eminent political writers belonging to one political party or another. The yearly subscription for a daily paper is commonly ten dollars (about 41*s.* 6*d.*) the year, which is but very little over 1½*d.* for each paper. There are smaller sheets called 'Transcripts,' also published daily, the price of one of these, containing all the news of the day, is only a halfpenny. The American newspapers (except two or three published at Washington) never attempt to give the speeches of the members of Congress at full length. In Boston and New York newspapers of a most gigantic size have been published. The Boston 'Notion' is in four pages, each equal to two pages of the 'Times' or 'Morning Chronicle;' and in the supplements to the 'World,' published at New York, each page is about equal to four of such pages, the uninterrupted columns of type being very nearly five feet long and the pages three feet wide.



[The Parson and the Clerk of Oxenford.]

CHAUCER'S PORTRAIT GALLERY.

THE PARSON.

Had Chaucer never written a line but what is contained within this description of the "pouré Parson of a town," he must have been looked upon as one of the greatest of writers. It is not that it is more poetical than his other descriptions; according to the ordinary notions of poetry, Dryden's imitation and enlargement of this character would be considered as infinitely more flowery and brilliant: but if to deal with sentiments and emotions of the highest and most universal interest, and to do this in the best possible manner for the proper illustration of the subject, be the province of the great poet, then is Chaucer one of the greatest; and precisely as Dryden has departed from him, so has he essentially deteriorated. In the one, you have all the grandeur and repose of a great work; in the other, you have all the bustle and vigour of a clever poet. It is impossible to find a trace of Chaucer's presence in his description; it is almost equally difficult to forget Dryden's in his. Considering the character he had to draw, a man of the sublimest Christian principles and feelings, and considering also the very humble position in which he thought proper to place him, what can be finer, or more true to the best principles of art, than the delightful homeliness, the patriarchal simplicity of style here adopted. The description is long, but we cannot injure its effect by division:—

"A good man was there of religión,
That was a pouré Parson of a town:
But rich he was of holy thought and work.
He was also a learnéd man, a clerk
That Christe's gospel truély would preach.
His parishens devoutly would he teach.
Benign he was, and wonder diligent,
And in adversity full patiént:
And such he was yproved often sithes.*
Full loth were him to cursen for his tithes;
But rather would he given out of doubt
Unto his pouré parishens about
Of his off'ring, and eke of his substance.
He could in little thing have suffisance.
Wide was his parish, and houses far asunder,
But he ne left not for no rain nor thunder
In sickness and in mischief† to visit
The farthest in his parish, much and lite.‡
Upon his feet, and in his hand a staff.
This noble ensample to his sheep he yaf,§
That first he wrought, and afterwards he taught.
Out of the Gospel he the wordés caught,
And this figúre he added yet thereto:—
That if gold rusté, what should iron do?
* * *
He setté not his benefice to hire,
And left his sheep accomb'red|| in the mire,
And ran unto Londón, unto St. Paul's,
To seeken him a chantéry for souls,

* Since. † Misfortune. ‡ *Much and little*—rich and poor. § Gave. || Encumbered—embarrassed.

Or with a brotherhood to be withold;
But dwelt at home, and kepté well his fold.
So that the wolf ne made it not miscarry:
He was a shepherd, and no mercenary.
And though he holy were, and virtuous,
He was to sinful men not dispitous;
Ne of his speeché dangerous, ne digne*,
But in his teaching discreet and benign.
To drawen folk to Heaven with fairéness,
By good ensample, was his business.
But it were any person obstinate,
What so he were of high or low estate,
Him would be snibben sharply for the nonés;
A better priest I trow that no where none is.
He waited after no pomp ne reverence,
Ne maked him no spiced conscience;
But Christe's love, and his Apostles twelve,
He taught, but first he followed it himselve."

There is a curious evidence in this description that it was borrowed from or applied to a real person. "Such he was yproved often sithes:"—Since when? Chaucer must mean *since the pilgrimage*, as that is the matter of which he is writing. Dryden is said to have applied his description to Bishop Ken; and there are evidently in the latter personal allusions which justify the supposition that he had some particular individual in his eye. Having referred to Dryden's description in the way of contrast, it will be only proper to adduce an extract from it, to justify our remarks, or at least to enable our readers to judge for themselves He thus commences,—

"A parish priest was of the pilgrim train,
An awful, reverend, and religious man:
His eye diffused a venerable grace,
And charity itself was in his face.
Rich was his soul, though his attire was poor;
(As God had clothed his own ambassador)
For such on earth his bless'd Redeemer bore.
Of sixty years he seem'd, and well might last
To sixty more, but that he lived too fast;
Refin'd himself to soul, to curb the sense,
And made almost a sin of abstinence.
Yet had his aspect nothing of severe,
But such a face as promised him sincere;
Nothing reserv'd or sullen was to see,
But sweet regards and pleasing sanctity.
Mild was his accent, and his action free.
With eloquence innate his tongue was arm'd;
Though harsh, the precept yet the people charm'd.
For letting down the golden chain on high,
He drew his audience upward to the sky;
And oft with holy hymns he charm'd their ears,
(A music more melodious than the spheres).
For David left him, when he went to rest,
His lyre; and after him he sung the best."

In spite of the beautiful lines contained in the foregoing passage, it seems on the whole, when compared with Chaucer, sad work. Such negative excellences as that he was not "sullen" nor "reserved," or such positive ones as that his "action" was "free," and that since David "he sung the best," are utterly destructive of the plain quiet sublimity of the original, as an exemplification of the character of a perfect Christian priest.

In the Sutherland manuscript, the surcoat and hood of this pilgrim are of scarlet, such being the habit of a ministering priest in England till Elizabeth's time. The placid countenance of the venerable man is finely shown. His hands are crossed upon his breast, and round his waist is a girdle of beads.

THE HYGROMETER.

SOME of the most important phenomena observable in the atmosphere are those which result from the presence therein of water, in a state more or less vaporised; for the production of fogs, clouds, rain, dew, snow, hail, hoar-frost, &c., could not occur unless this moisture were present in the air. As it is important to be able to compare the degree of moisture in the air at different times and places, an instrument termed the hygrometer (measurer of moisture) has been devised for this purpose; and the indications yielded by such instruments always occupy a column in meteorological tables. We will offer a few brief explanations on this matter.

However fine the weather may be, however cloudless and brilliant, the air is never without a supply of moisture suspended in it or diffused among it. This moisture, by assuming the form of vapour, becomes invisible, and thereby escapes our cognisance; but if any circumstances should arise whereby this vapour is condensed, it becomes visible to us by intercepting more or less the passage of light through the air; and we recognise its existence in the form of fogs, clouds, mists, &c. Such a change is likely to result from a diminution of temperature in the air, by which the heat present in it is not sufficient to retain the moisture in the form of vapour.

If it be asked how the moisture gets into the air, or what is the source from whence it is derived, the answer informs us of the important fact that evaporation is constantly going on from the surface of water at all temperatures and in all climates. In the common operations of daily life, this process of evaporation is always going on. If we leave a little water in an open vessel, or if we spill water on the floor, or if a shower of rain falls, the process of *drying* universally follows, which is nothing more than an effect of evaporation. Evaporation goes on more rapidly in warm than in cold weather, that is, the water is more ready to assume the form of vapour, and the air is more disposed to receive the vapour thus formed, in warm than in cold weather; but at all temperatures of the air there is a certain point beyond which no further moisture can be retained in it. When this saturating point has been arrived at, any addition of vapour, or any reduction of temperature, will cause a portion of the vapour to assume one or other of the appearances known as clouds, mists, rain, &c.

When these facts became gradually known, illustrating, as they do, the powerful influence which moisture exerts on the phenomena of weather, a desire was felt to devise some means of measuring the amount of moisture contained in the air at any given time and place, and various persons set their ingenuity to work on the matter. The first hygrometrical instruments were of very imperfect construction; they were, in fact, not so much hygrometers as hygroscopes, that is, they merely indicated, and not measured, the moisture in the air. Most persons are aware that fibrous materials contract in length when wetted; indeed, if a rope ten or twelve feet long, fixed vertically, have a heavy weight attached to its lower extremity resting on the ground, and if the rope be wetted, the weight will be lifted from the ground. This property was made the basis of the first hygrometers, one form of which was as follows:—To a nail or hook, fastened in the wall, the end of a piece of whipcord or catgut was attached, and the cord was passed successively over four or five pulleys, whose axes were fixed in the same wall. At the other end of the cord hung a weight, for the purpose of giving it a proper degree of tension; and to this weight an index was attached, opposite to a graduated plate fixed against the wall. When the air was very humid, the moisture caused the cord to shrink, by which the weight was drawn upwards, and the index pointed to some division near the top of the graduated scale on the plate. At this part the scale was marked "wet," at a higher part, "very wet;" at

* Disdainful.

lower positions, "dry," "very dry," &c.; indicating that when the moisture in the air was such as to elevate the index, by contracting the cord, to the point marked "wet," that wet weather was likely to follow; and so of the other heights.

Another hygrometer consisted of a piece of catgut fastened to a hook at one end, and suspending a weight at the other, which weight carried an index round a graduated circle described on a horizontal board. When an increased quantity of moisture was in the air, the cord became additionally twisted, and the index attached to the weight was carried partially round the graduated circle.

Hooke constructed an hygrometer of the beard of a wild oat. He had a brass plate, about four inches square, with a ring fixed to it, and graduated on the surface. The top of the oat-beard was fastened to a small cylindrical clamp attached to a light brass index, and the other end was fixed into another clamp beneath the plate; the beard passes through a hole in the plate. The twisting of the oat-beard, by variations in the humidity of the air, caused the index to revolve through a greater or less number of degrees, and thus the beard became in some sense an hygrometer. De Luc and Saussure likewise employed natural products as the hygrometric substance. De Luc attached a narrow strip of whalebone, about ten inches in length, to a small apparatus, in such a manner that the elongation or contraction of the whalebone by changes of humidity caused a small index to move round a graduated scale. In Saussure's instrument the hygrometric substance was a human hair, freed from all unctuosity by being boiled in ley, and attached, in a similar manner to those mentioned above, to an index working round a graduated scale.

Other persons have used various kinds of bearded grass as the hygrometric substance, and many forms of arranging the apparatus have been proposed. But all these plans are of limited use, on account of the uncertainty respecting the retention of the hygrometric quality in the substance employed. Some have proposed the adoption of a sponge, which, fixed to one end of a delicate balance, would have a slight increase of weight when more fully charged with moisture from the air, and a diminution of weight in dry weather. Others have proposed to employ sulphuric acid, which absorbs moisture very rapidly, and may thus be made to indicate changes of humidity. The weather-house, the hooded monk, the automaton hygrometer, &c. are mere toys, and need not be described here.

Other kinds of hygrometers are those which depend on evaporation rather than on contraction or elongation. Leslie constructed one in which two glass bulbs were connected at the bottom by a bent tube containing sulphuric acid. When the bulbs, both of which are filled with air, are at the same temperature, the liquor in the tube remains stationary; but if one bulb be colder than the other, the air in the warmer bulb, by its greater elasticity, depresses the liquor in the stem attached to that bulb, and elevates it in the other. This property is made to serve hygrometric purposes by coating one of the bulbs with cambric, kept moist with pure water conveyed to it by filaments of floss silk from an adjacent vessel. When the air is dry, the evaporation from this wetted surface will go on more rapidly than when it is humid; and a scale attached to the instrument is made to indicate the varying states of dryness and humidity. Dr. Mason constructed an instrument somewhat on the principle of Leslie's hygrometer, indicating the humidity or dryness of the air by comparing the height of a dry thermometer with that of another whose bulb is kept wetted, and from which evaporation is going forward.

But the most important and accurate hygrometer is that of Professor Daniell, the action of which depends on the following principles:—If we expose a body to the atmosphere, whose temperature is lower than that of the latter, it will first abstract heat from the vapour in contact with it, and lower its temperature until the vapour arrives at that temperature which it had when it passed from the liquid to the vaporic form: the body will then bring the vapour to its own temperature; and this vapour will be found condensed in the form of dew on the exterior of the body. This effect we often see produced when a glass of cold spring water is taken into a warm room in summer. Acting on these data, the construction of Daniell's hygrometer is thus effected:—On the top of an upright stand is supported a short horizontal glass tube, from each end of which a short tube descends vertically downwards, having a bulb at the bottom. The lower of the two bulbs contains ether, while the other bulb and the connecting tube contain vapour of ether; and by covering the upper bulb with muslin, and wetting it with ether, the hygrometric state of the air may be ascertained. The rapid evaporation of the ether from the wetted muslin, by abstracting heat from the enveloped bulb, causes a condensation of the etherial vapour within it; and this enables more ether to evaporate from the other bulb, and to pass through the tube. The exposed bulb becomes cooled by this process, until at length a condensation of atmospheric moisture takes place upon the surface. The temperature at which this occurs is called the dew-point, and to determine it a thermometer bulb is placed within the exposed bulb of the hygrometer. The humidity of the air affects the indications of the instrument in this way:—that if the air be saturated with moisture, a very slight reduction of temperature will produce the formation of dew, or the thermometer within the bulb will indicate nearly the same temperature as the thermometer in the open air at that moment; but if the air be very dry, the temperature must be reduced a great many degrees before dew will thus be formed.

To form a judgment of the probability of rain and similar phenomena from the indications of this instrument, we must bear in mind that rain follows, not from a great quantity of vapour in the air, but from the quantity being too great for the temperature. In a warm fine day there may perhaps be more vapour in the air than on a cold cloudy day: but the probability of rain may be less, because the greater temperature may more than counterbalance this increased quantity. The dew-point then, by giving the temperature of the vapour contained in the air, enables us to compare temperature with that of the air itself; and if the difference is not great, whatever the respective numbers be, a slight diminution of temperature in the air will convert the vapour into water.

We shall now be able to explain the meaning of the hygrometric indications in such calendars as those given in our Monthly Supplements for the last year. Let us take the Supplement for November, for instance (containing the December calendar): here we find, under the head of "Hygrometer," the following numbers:—

Mean dew-point	=	37°·6
Highest	=	53°
Lowest	=	15°
Mean dryness . . .	=	1°·7
Mean greatest dryness of day	=	3°·3
Greatest dryness . .	=	10°

The dew-point being that temperature below which air cannot be reduced without condensation of the vapour, contained in it, the *mean* dew-point is evidently the average of all these temperatures throughout the month of December; so that, taking one day

with another, and one hour with another, the air must be as high as 37°·6 temp. Fahr., in order to retain the moisture within it in a vaporic form. The terms "highest" and "lowest" speak for themselves. The term "mean dryness" is in some degree an indication of the probability of rain, and results from subtracting the mean dew-point from the mean temperature of the air: thus, under the head "thermometer," we find "mean temperature" to be 39°·3; and as the "mean dew-point" is stated above at 37°·6, we have 39°·3 − 37°·6 = 1°·7; showing that if the mean temperature of the air in December were reduced less than two degrees, the vapour contained in it would reach the condensing-point, and cloudiness, if not rain, would result. "Mean greatest dryness of the day" explains its own meaning; and "greatest dryness" is the greatest difference observed during the month between the temperature of the air and the temperature of the contained vapour: thus, there occurs, or is likely to occur, in the month of December, a period when the temperature of the air will be 10° higher than the dew-point.

The time has not yet arrived for predicting the fall of rain from the indications of the hygrometer alone, because the temperature, the barometric pressure, and the electrical state, all influence the production of this phenomenon. But there can be no doubt that its indications will afford valuable assistance in the deduction of general laws in meteorology; and it is for this purpose that registered observations are kept with so much care.

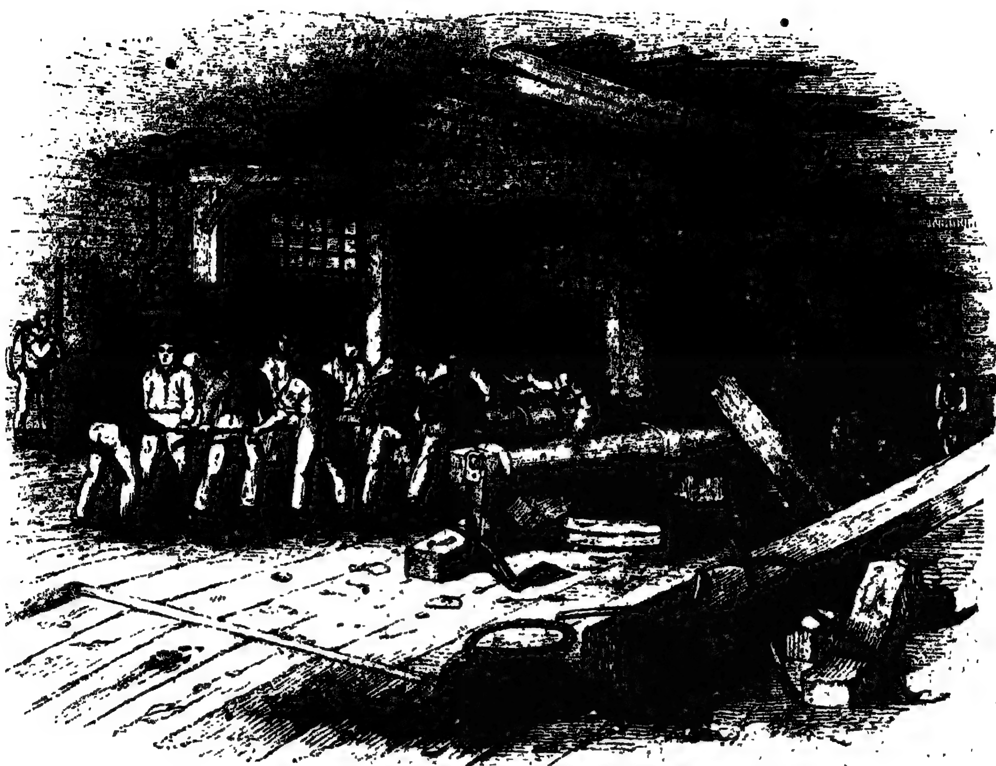
A thin glass tumbler, a small thermometer, and some cold spring water will furnish the means for showing in a familiar manner the mode in which the "dew-point" and the "dryness" are ascertained. We may regulate the temperature of the water until it has attained just such a point that it will cause a deposition of dew in the exterior of the glass. The temperature of the water at that moment will give the "dew-point," and the difference between that and the temperature of the air will give the "dryness." If the season of the year be such that the temperature of the air is as low as that of spring-water (which it is not in summer), the water must be artificially cooled with ice, or a mixture of salt and snow, or an alkaline salt, down to 10° or 15° below the temperature of the atmosphere.

Process and History of Lithography.—The process of lithography depends on the facility with which some kinds of stone absorb either grease or water, and on the natural antipathy which grease and water have for each other. An even surface having been given to the stone, a drawing is made upon it with a greasy chalk. The stone is then wet, and the printer passes over it a roller covered with printing ink, which adheres to those parts only which are drawn upon with the chalk; a damp paper is then pressed upon it, and receives an impression of the drawing. Lithography was accidentally discovered about the year 1792 by Alois Senefelder, the son of a performer at the Theatre Royal of Munich. He was a student of law at the University of Ingolstadt, and after his father's death tried a theatrical life, but without success. He then became an author, but being too poor to publish his work, tried various methods of writing on copper, in order that he might then print himself, and soon found that a composition of soap, wax, and lampblack formed an excellent material for writing, capable, when dry, of resisting aquafortis. To obtain facility in writing backwards, as copper was too expensive, he procured some pieces of calcareous stone, which when polished served him to practise upon. His mother having one day desired him to take an account of some linen she was sending to be washed, he wrote it out on a piece of this stone with his composition of soap and wax. It afterwards occurred to him, that by corroding the surface with acid, the letters would stand out in relief, and admit of impressions being taken from them. He tried the experiment and succeeded, and soon found that it was not absolutely necessary to lower the surface of the stone, but that simply wetting it was sufficient to prevent the printing ink from adhering to any parts except those which were marked with the composition. Such was the invention of lithography, and Senefelder continued to pay unremitting attention to the improvement of the art. In 1796 pieces of music were printed, and it was perhaps the first time that lithography became of real use. The difficulty of writing backwards brought about the invention of the transfer paper. In 1799 Senefelder took out a patent at Munich, and soon after entered into partnership with a Mr. André of Offenbach, who proposed to establish presses and take out patents in London, Paris, and Vienna. He came to London in 1801, with a brother of Mr. Offenbach, and communicated the new art, then called poly-autography, to many of our best English artists, who tried it; but the continual failures, through want of skill in the printing, and the difference between German and English materials, caused it to be abandoned. Having separated from Mr. André, Senefelder went to Vienna, where he tried to apply lithography to the printing of cottons, but apparently without success, and he returned to Munich in 1806, in which year the Professor of Drawing at the Public School at Munich, Mr. Mitterer, succeeded in multiplying copies of his drawings for his pupils by lithography. He is also said to have invented the composition for chalk as now made. In 1809 we find Senefelder Inspector of the Royal Lithographic Establishment at Munich, and engaged in printing a map of Bavaria, and soon after invented the stone paper, which, however, did not succeed; it was exhibited in 1823 at London, by a partner of Senefelder, but its liability to crack by being wet, and the pressure of the press, rendered it useless. Little was done in England after 1806 till its revival in 1817, since which time it has been gradually improving, till lately it has acquired still greater powers by the means of employing a second stone, by which is obtained a perfect imitation of drawings made on tinted paper, having the lights laid on with white.—*Fielding's Art of Engraving.*

Morals and Manners amongst a Scattered Population.—I know it has been laid down as a principle, that the more and closer men are congregated together, the more prevalent is vice of every kind; and that an isolated or scattered population is favourable to virtue and simplicity. It may be so, if you are satisfied with negative virtues and the simplicity of ignorance. But here, where a small population is scattered over a wide extent of fruitful country, where there is not a village or a hamlet for twenty or thirty or forty miles together—where there are no manufactories—where there is almost entire equality of condition—where the means of subsistence are abundant—where there is no landed aristocracy—no poor-laws nor poor-rates, to grind the souls and the substance of the people between them, till nothing remains but chaff,—to what shall we attribute the gross vices, the profligacy, the stupidity, and basely vulgar habits of a great part of the people, who know not even how to enjoy or to turn to profit the inestimable advantages around them? And, alas for them! there seems to be no one as yet to take an interest about them, or at least infuse a new spirit into the next generation. In one log-hut, in the very heart of the wilderness, where I might well have expected primitive manners and simplicity, I found vulgar finery, vanity, affectation, under the most absurd and disgusting forms, combined with the want of the commonest physical comforts of life, and the total absence of even elementary knowledge. In another I have seen drunkenness, profligacy, stolid indifference to all religion; and in another the most senseless fanaticism. There are people, I know, who think—who fear that the advancement of knowledge and civilization must be the increase of vice and insubordination; who deem that a scattered agricultural population, where there is a sufficiency of daily food for the body; where no schoolmaster interferes to infuse ambition and discontent into the abject self-satisfied mind; where the labourer reads not, writes not, thinks not—only loves, hates, prays, and toils,—that such a state must be a sort of Arcadia. Let them come here!—there is no march of intellect here!—there is no "schoolmaster abroad" here! And what are the consequences? Not the most agreeable to contemplate, believe me. —*Mrs. Jameson's Winter Studies and Summer Rambles in Canada.*

Recreation.—Recreation is a second creation, when weariness hath almost annihilated one's spirits. It is the breathing of the soul which otherwise would be stifled with continual business.—*Fuller.*

A SECOND DAY AT A SHIP-YARD.



[Interior of Mast-house.]

In our last Supplement we gave a brief description of the ship-building establishment of Messrs. Green, Wigrams, and Greens at Blackwall, and also traced the earlier part of the processes connected with the construction of a ship. We now propose to take up the subject at the point where we then left it, and to show, as far as the nature of our work admits, the subsequent labours required for the completion of a vessel.

It will be remembered that, after speaking of the occupation of the ship's draughtsman, we explained the arrangement of the building-slip, the laying-down of the keel on the blocks, and the erection of the curved frame-timbers of a vessel. The form of the hull is thus given; in a rude manner, it is true, but still with a degree of certainty which determines the character of the vessel. The numerous pieces subsequently added, whether of British or African oak, elm, or fir, are sawn at the pits, under the supervision of the 'converter;' and are afterwards, in most cases, trimmed, or, as it is termed, 'dubbed,' with an adze. In common carpenter's work, the only tool used, after the saw, for paring away and levelling the surface of wood, is generally the *plane*; but in the work of the shipwright, where more bulky materials are operated on, where almost every piece is to be hollowed or rounded in some part or other, and where great neatness is not required, the adze becomes a valuable instrument. The various kinds of joints whereby one timber or plank is connected with another, such as tenon-and-mortice, &c., are made by the aid of nearly the same tools as those employed in carpentry, but of a larger size and stronger make. As may be reasonably supposed, these prepared timbers are often very bulky and ponderous; and the conveyance of them from the saw-pit to the building-slip requires the aid of horses. There is a whimsical anecdote given by Strype, in his edition of Stow's 'Survey of London,' which, while it immediately illustrates this subject, also carries us back to an early period in the history of the Blackwall ship-yard, introducing us to this scene of bustle as it was in the seventeenth century:—"In the time of the elder Sir Henry Johnson, Knt., ship-builder, an horse belonging to his yard was wrought there thirty-four years, driven by one man; and he grew to that experience, that at the first sound of the bell for the men in the yard to leave off work, he also would cease labouring, and could not by any means be brought to give one pull after it: and when the bell rang to work, he would as readily come forth again to his labour, which was to draw planks and pieces of timber from one part of the yard to another." We believe that a public-house in Blackwall has received the sign of the 'Old Hob,' in honour of the horse which bore that name, and which took this very independent mode of showing his importance.

But to return. The keel, the stern-post, and the stem, form the three great supports of the frame of the vessel; the first being horizontal, the second rising from it almost perpendicularly at one end, and the third rising in a curve at the other. Among the timbers which are subsequently adjusted to the vessel are

three, called the keelson, the sternson, and the stemson, which are in some sense interior representatives of the three just named. The keelson is fixed on the floor timbers, immediately over the keel, and forms that part on which the steps or blocks of wood are placed which support the masts: it is secured down to the keel by means of bolts three feet in length, which pass entirely through both, as well as the intervening wood. The stemson and the sternson rise from the two ends of the keelson, and form internal supports to the ends of the vessel. The timbers are often strengthened within by pieces called *riders;* but in modern vessels they are frequently secured and braced one to another by diagonal iron plates, from half an inch to an inch in thickness, passing nearly from the top to the bottom of the hull, inside the vessel. Being bent round the concavity of the ship's side in an oblique direction, each piece of iron crosses several different frames of timbers, and is securely bolted to them all.

The small portion of the hull of a vessel which is seen above the level of the water presents to view a surface covered with horizontal or nearly horizontal ranges of planking; and if we could see lower down, towards the keel, we should find a similar approach to a horizontal direction in the pieces of wood with which the hull is covered. Withinside, too, a similar arrangement is observable. The vertical frames of timbers of which we have been speaking do not present themselves to the eye of a person viewing a finished vessel, either within or without. The whole are covered with planking, laid in nearly horizontal rows or 'strakes.' The planks may be regarded as forming the skin with which the ribs of the ship are covered; and, indeed, the shipwrights, who almost seem to regard their ship as a living being, apply the term 'skinning' to the operation of laying on these planks; an opposite sense, it is true, to that in which we are in the habit of using this term. Nor is this skin by any means a trifling affair, for the thickness of the planks which form it varies from about three to six inches. The planks are formed of sound and durable oak, and are often nearly thirty feet in length. They are brought, while at the saw-pit, as nearly to the required form as may be practicable; and are afterwards worked with the adze, to give them the proper contour. This must not be supposed to imply that the planks are hollowed or curved by the adze to the exact shape of the vessel, but that the width and thickness of adjoining planks are adjusted to each other. When a prepared plank is laid against the outside of a vessel, the convexity of the latter causes the ends of the planks to stand out several inches from it; and on the other hand, when laid on the inside, the concave surface causes the ends to be in contact with the timbers, and the middle to be several inches away from them. The planks require, therefore, the aid of powerful instruments to force them close to the timbers previous to bolting, and this operation is further assisted by bringing the plank to a heated and moistened state by steam.

The parts of the planking vary in thickness, and receive distinctive names, according to the places which they occupy; but all are treated nearly in the same way—sawn, dressed with an adze, steamed, forced to the curvature of the ship, and fastened to the timbers with bolts. The trenails, which are more numerous than the bolts, are not driven in till a subsequent stage in the operations. In adjusting the planks to the ship's sides, care is always taken that the adjoining ends of two planks in one row or strake shall not occur at the same part of the ship's length as a joint in the row next above or below it, a caution similar to that observed in laying the courses of bricks in a wall, or the rows of slates on a roof, and the object of which is sufficiently obvious in relation to the strength of the structure. Whoever has an opportunity of seeing the whole hull of a vessel, will observe that the planking is ranged with great regularity, each strake or row diminishing in width towards the ends, to conform with the diminishing size of the vessel.

In the building of a ship matters are so arranged that many different parts are in progress simultaneously; some workmen making preparations for the beams of a vessel withinside, while others are planking the exterior, and others perhaps engaged at various parts of the head and stern. The beams are stout and well finished timbers stretching across the vessel from side to side, at intervals of a few feet, and serving not only to support the deck or decks, but also to bind the two sides of the vessel together. These beams, situated as they are at right angles to the keel, have given rise to many nautical expressions which are rather incomprehensible to general readers: thus the 'breadth of beam' is the width of a vessel; an object seen at sea in a direction at right angles with the keel, is said to be 'on the beam;' when a ship inclines very much on one side, so that her beams approach to a vertical position, she is said to be 'on her beam ends;' and many other similar phrases might be adduced.

The beams are ranged at such distances apart, that an East Indiaman of a thousand tons burden requires about thirty beneath the main deck. Each beam is usually formed either of one or of three pieces, according to the dimensions of the vessel; the three pieces, in the latter case, being securely joined or scarfed together. The beams are not straight, but are curved upwards in the middle, so that their upper surfaces are convex and their lower concave; the bending being such that there is a curvature of about one inch to every yard in the length of the beam. The ends of the beams are made to rest on stout planks called clamps; but the real fastening is by means of iron brackets technically termed *knees*, bolted both to the beam and to the timbers of the ship. Besides the fastenings at the two ends of each beam, there are supporters in the middle, which are often formed of cast-iron, combining lightness of appearance with strength.

Various ledges and frames, called *partners, coamings*, and *carlings*, being arranged between the beams, the decks are next attended to. These divide the hull into different stories, analogous to those of a house; and in the one case as in the other, the number of floors is greater in some instances than in others. Large ships of war are furnished with three entire decks, reaching from the stem to the stern; besides two shorter decks called the forecastle and the quarter-deck, the one placed at the head of the vessel, and the other towards the stern, a vacant space called the *waist* being left between them, at the middle of the ship's length. In smaller vessels of war, and in merchantmen, the decks are fewer; two whole decks and a quarter-deck being the number in an East Indiaman. The deck is generally made of Dantzig or Memel fir, and for vessels exposed to a hot climate yellow pine is sometimes employed. The deck-planks are laid side by side, lengthwise of the ship, or parallel to the keel, and vary from six to ten inches in breadth, and from two to four in thickness. They are nailed down to every beam and to every carling, either with iron nails or with nails formed of a mixed metal.

We have said that the planking which covers the inside and outside of a ship is secured, partly by bolts and partly by wooden pins called trenails, to the timbers; and that the trenails are not driven in until some time after the bolts. The object of this seems to be, that by making the trenail-holes a considerable time before the trenails are inserted, the wood round each hole has an opportunity to become seasoned. The holes are made with an auger, which is a kind of gim-

blet or borer, varying from an inch to two inches in diameter, according to the size of the trenail to be inserted. The head of the auger is provided with a cross handle of considerable length, which furnishes a leverage to the workman using the instrument. This kind of labour is often very severe, from the hardness of the wood, the great depth to which the hole is to be bored, and the awkward position in which the man has to place himself. The curvature of a ship near the keel is almost horizontal, and at other parts goes through all the gradations from a horizontal to a vertical direction; and the man who is engaged in boring the trenail-holes has to vary his position and mode of working, sometimes standing and at other times sitting, according to the part of the vessel at which he is at work. It is so arranged that the same trenail shall pass, not only through the outer planking and the frame-timbers, but also through the inner planking: by which all three are bound well together; and the trenail-holes are bored in conformity with this arrangement. When the proper time arrives for driving in the trenails, a set of men, each provided with a large and heavy hammer, proceed to that operation. The trenail is made slightly larger than the hole into which it is to be driven, so as to bite or cling closely to the timbers; and a succession of powerful blows is requisite to urge it forward. The trenail is a little longer than the depth of the hole, and the superfluous end is taken off with a saw when the driving is finished. It is then tightened in the hole by small wedges driven in at the end.



The planking and trenailing having brought the surface of the hull to a tolerably even state, which is further assisted by a little trimming or 'dubbing' with the adze, a process follows which is indispensable to the exclusion of water from the vessel, viz. that of *caulking*. The planks cannot be brought so close together as to make the joining impenetrable to water, and the joint is therefore filled up with oakum. We explained in the last Supplement the manner in which threads of oakum are twisted by boys out of refuse rope, and alluded to the mode in which they are employed. A kind of chisel, called a caulking-iron, is employed to drive the threads of oakum into the seams. The oakum is not placed merely at the outer edges of the crevices, but is driven in to a depth equal to the whole thickness of the plank. Sometimes the edges of the planks are chiselled away a little, in order to afford room for the entrance of the oakum; and in all cases the caulkers manage the seams in such a manner as to fill them up with a dense and compact layer of oakum, which not only answers the purpose of making the



vessel tight, but also helps to consolidate and strengthen the whole ship in a very considerable degree, by making the edges of the planks bear hard against each other, so that one part cannot move or work independent of another. At the time when this caulking of the seams is going on, the planks themselves are examined, and any shakes or rents or fissures, however small, are well filled with oakum. This process being finally completed, all the caulked seams are coated, or, as it is termed, 'payed,' with hot melted pitch and rosin, by which the hempen fibres of oakum are preserved from the action of the sea-water. The *sheathing* is an exterior coating afterwards put on the bottom of the vessel; but this is a stage in the proceedings at which we have not yet arrived.

The operations withinside the vessel are, as may be supposed, much more varied than those on the outside, but they partake more and more of the nature of carpentry as the construction of the vessel advances. After the various pieces are adjusted which form the main support of the different parts of the vessel, the hull is divided into compartments accordant with the purposes for which the vessel is intended. The decks, port-holes, magazines, and berths for several hundred men in a man-of-war, and the cabins, the passenger accommodation, and luggage-room of a merchant ship, of course require different arrangements of the interior. Supposing these matters to have been completed, we will next proceed to the important affair of *launching*, by which the vessel is borne on to the liquid element which is afterwards to form her home. Those persons who have never seen a ship launched, and who are but little acquainted with these matters, may feel it desirable to know in what stage of the building process the launching is effected. We may here mention, then, that the hull is launched before it has been sheathed or coated with copper, and also before it is fitted with masts, yards, bowsprit, rudder, sails, or ropes. There are various reasons why these several parts are more conveniently fitted after than before the launching; the height of the vessel from the ground when on the building-slip—the angle at which it slopes towards the water—the difficulty of getting into the vessel, &c., are some of these reasons; and with regard to the sheathing, it is deemed better to be postponed until the soundness of the naked planking has been tested by immersion in the water.

We explained in the former article, that the ship is built on blocks, laid in regular succession along the building-slip, and so adjusted that the keel, which rests immediately on their upper surfaces, shall have

an inclination of about five-eighths of an inch to the foot towards the river. These blocks form the central support beneath the vessel, during the whole progress of building: and the vessel is further supported at the sides by shores, or poles, raised at various angles from the ground. As the time of launching approaches, preparations are made for removing all these lateral supports, for lifting the keel completely from the blocks, and for constructing two temporary "slippery paths" down which the vessel may slide into the river. The whole of these operations are very curious, and require great nicety and care to ensure success. Along the building-slip, on each side of the keel, and distant from it about one-sixth of the vessel's breadth, is laid an inclined platform, formed of many pieces of wood, and presenting a flat upper surface inclining downwards towards the river at an angle of about seven-eighths of an inch to the foot, and consequently more sloping than the position of the keel. The inclined plane thus formed is called the 'sliding-plank:' and it has a raised edge, or ledge, called the 'side-way,' or 'ribband,' projecting four or five inches upwards from its outer edge. The sliding-plank is placed upon supporting blocks, so as to be elevated some feet from the ground. A long timber called a 'bilge-way,' with a smooth under-surface, is laid upon this sliding-plank; and upon this timber, as a base, is erected a framework, reaching up to the hull of the ship. This framework, which is called the 'cradle,' is formed partly of solid wood-work, filling up the whole space between the bilge-way and the hull, and partly of short poles called 'proppets,' which are erected nearly vertically, and abut against a plank fastened temporarily to the bottom of the ship. These operations are carried on on both sides of the keel, and at a few feet distant from it; and the vessel may in this state be almost said to have three keels, the real one midway between two temporary ones. At a certain stage in the building-up of these pieces, a layer of tallow, soap, and oil is placed between the sliding-plank and the bilge-way, to diminish the friction during the sliding of the latter.

But it is not sufficient that these two temporary false keels reach up to the hull: the hull must actually bear with its whole pressure upon them, so that the blocks beneath the real keel may be relieved from the enormous weight of the vessel. To effect this, a great number of wedges are driven in just above the bilge-way, by the action of which the vessel is in some degree lifted off the blocks, and made to rest on the bilge-ways. This operation is one of the most singular which a ship-yard presents. Very frequently a hundred men are driving the wedges at once; half of them being ranged on one side of the vessel and half on the other. Each man is provided with a heavy hammer, and at a given signal all strike together, whereby a hundred wedges are driven at the same instant. The effect produced by the wedge is at all times one of a remarkable and powerful kind; and when the exertions of so many men are in this manner simultaneously applied, the effect is irresistible: the huge ship, though not actually elevated above the central blocks, is so far moved as to transfer her pressure from them to the bilge-ways and sliding-planks. If the shores by which the sides of the ship are supported were now knocked away, the vessel would be likely to slide down into the river, the bilge-ways gliding over the slippery surfaces of the sliding-planks. But to prevent this from occurring before the proper time, a short piece of wood called a 'dog-shore' is fitted to the upper end of each bilge-way, in such a manner as to prevent the bilge-way from beginning to slide so long as the dog-shore remains there.

A few other arrangements being made, the ship is ready for launching. The dog-shores, and the hammers with which they are to be knocked away, are generally painted blue, and now become conspicuous objects, for a visitor looks at them as the apparently slight means whereby the vessel is to be urged into the water. A screw is fixed against this end of the keel, to assist in urging the ship forward, if such a course be necessary, and some of the blocks under the keel are cut away, to make the vessel rest more entirely on the bilge-ways. At a given signal two men, one on each side, knock away the dog-shores; the vessel glides slowly downwards into the water; a flask of wine is thrown at the head; she is christened with the name selected for her; and when she touches the water all give her a hearty greeting. This is an exhilarating sight; and has formed the subject for many a picture; which must, however, necessarily be defective, for a picture cannot represent motion. Poets, too, have not failed to celebrate this gliding of a ship to its watery dwelling. If we transfer the scene from Plymouth harbour to the river Thames, the following lines by Carrington would not be inapplicable to our present subject:—

> "At last,
> By genius nobly form'd, the finish'd ship
> Is ready for th' impressive launch. The day
> Arrives, the Atlantic tide is swelling high
> To place her on its bosom. O'er her decks
> The streamers wave all-gallantly, around
> Enlivening music floats, while myriads crowd
> Where the bold vessel on her rapid plane
> Sits proudly. Hark! the intrepid artizans
> Remove her last supports;—a breathless pause
> Holds the vast multitude;—a moment she
> Remains upon her slope,—then starts,—and now
> Rushing sublimely to the flashing deep,
> Amid the shouts of thousands she descends;
> Then rises, buoyantly, a graceful pile,
> To float supinely on the blue Hamoaze."

Having launched our ship, we will next proceed to speak of the masts with which it is to be furnished. Whether the masts are placed in the vessel immediately after she is launched, or whether some other operations are previously performed, depends on many different circumstances; but in either case, the masts have been prepared during the time that the ship has been on the stocks, the workmen employed on the one being a totally different set from those engaged on the other, and the operations being carried on in a different part of the yard. Masts, as is well known, serve as supports to the sails, and are themselves supported by ropes and tackle. The number varies in different kinds of ships: for instance, a ship properly so called is provided with three masts; a brig and a schooner are each provided with two; while one mast forms the complement for a sloop, a cutter, or a smack. But it is necessary here to remark, that a mast is not, except in small vessels, a straight piece of timber put up in one single length; it is generally formed of three stages or tiers rising one above another, each of which receives a distinctive name. Let us take for example a 74-gun ship of war. Here are three masts, the foremast, the mainmast, and the mizen-mast; and each one of these three is formed of three subordinate masts, rising one above another, of which the lowest is termed the lower mast, the next in height the top-mast, and the third the topgallant-mast. The length of the lowest is rather more than that of the other two put together; and the united length of the whole is, in the case of the mainmast, above two hundred feet. In a merchant vessel, say of a thousand tons burden, the arrangement is just the same in principle, but the dimensions smaller, the nine subordinate masts varying from about twenty to ninety feet in length, the shortest being the mizen topgallant-mast, and the longest the lower mainmast.

The masts for such vessels as the Agincourt and Southampton East Indiamen vary from about ten to twenty-eight or thirty inches in diameter; and as the latter dimensions are too great to allow the whole to be made from one tree, the mast is built up of several pieces, laid side by side in various ways, and bearing the technical names of spindles, side-trees, front-fishes, side-fishes, cheeks, cant-pieces, fillings, heel-pieces, and others equally unintelligible to general readers. The principal part of each mast, or the whole mast, if the diameter be small, is made of Canadian fir, a tree which presents a remarkably straight and uniform trunk.

The mast-making shop, at the yard which is the object of our visit, is a very large roofed building, above a hundred feet in length by seventy in width. It is situated close to the mast-pond in connection with the wet-dock, so that the masts can be floated in or out of the yard with great facility. The mast-makers have some tools peculiar to themselves; but the main operations bear some resemblance to those by which the timbers of a ship are fashioned. The various pieces of which a mast is built up are sawn to their proper dimensions, and fitted together by various kinds of joints, called coaking, dowelling, &c., and of which the common tenon and mortice will furnish some idea. Various cutting instruments are employed to give the rounded or convex form to the mast, when the pieces are put together; and pieces of wood are attached to its surface, to answer several purposes, when the mast is put in its place in the ship. The extent to which this building-up of a mast goes may be judged from the fact that the lower mainmast alone of an East Indiaman weighs upwards of six tons; and when lying along the floor of the mast-shop, its length of ninety feet and thickness of two and a half impress one with no mean idea of its bulk.

The various pieces of which a large mast is formed would not be permanently retained in their proper places, were there not some external band or tie employed. The band used for this purpose consists of a series of iron hoops, ranged at intervals of four or five feet apart along the mast. These hoops are formed of iron bands about three inches in width and three-eighths of an inch in thickness; and after being welded as nearly as may be to the girth of the mast, they are fixed on it. Each hoop—of which the lower mainmast contains about twenty, and the others a proportionate number—is in the first place heated, not to such a degree as would scorch the wood on which it is laid, but so far as to give a slight expansion to its dimensions. A small brick-built kiln is situated near the mast-shop, and in this kiln a fire is made, on which the iron hoop is laid to be heated. When the heating is effected, the hoop is taken up by means of a kind of tongs, carried to the mast-shop, put over the small end of the mast (for every mast is of smaller dimensions at one end than the other), and pushed on as far as its diameter will permit. A party of fourteen men then join their exertions to drive the hoop on as tightly as possible. Six of them grasp a long iron bar called a 'poker,' and stand in an oblique line on one side of the mast; six others hold a similar bar on the other side of the mast; and the remaining two are provided with heavy hammers. The men, thus placed, then strike the hoop with the two pokers, the end of each poker being made to strike against the edge of the hoop, and all the twelve men urging the two pokers simultaneously, by which very powerful blows are given. At the call of 'hands up,' the men direct their blows to the edge of the upper part of the hoop; while 'hands down' is a direction to them to make the blows lower down. The two men with the hammers meanwhile deal powerful blows on the surface or face of the hoop. As the hoop is driven onwards to a thicker part of the mast, it necessarily binds the wood more tightly, and this is still further effected by the contraction of the hoop as the iron becomes cold. The ultimate effect is that the hoops give an extraordinary degree of strength to the mast. Our frontispiece represents this process of 'hooping a mast.'

The *bowsprit* and the *yards* of a vessel are made by the mast-makers, and may indeed be considered as masts, so far as the mode of making is concerned. The bowsprit is a large mast which projects obliquely over the stem, to carry sail forward, in order to govern the fore part of a ship, and to counteract the force of the after-sails: it also serves to hold the stays or ropes by which the foremast is kept in its position. It generally rises at an angle of about thirty-six degrees. It very nearly equals in diameter and is about two-thirds of the length of the lower mainmast; being, in an East Indiaman, nearly sixty feet in length, and two and a half in diameter at the larger end. The *yards* are long pieces of timber suspended upon the masts, for the purpose of extending the sails; some being suspended across the masts at right angles, and called square yards; others suspended obliquely, and termed lateen yards. The number of these yards in a large ship is about twenty, and the dimensions of some of them are very considerable. The main yard of a first rate man-of-war is above a hundred feet in length and two feet in diameter; while the other remaining yards have various lengths down to about twenty feet, and various diameters down to three or four inches.

While hearing of these very large and ponderous masts, yards, &c., the reader may naturally inquire how they are conveyed to the ship, and lifted in their places. On this point we will now offer a brief explanation. The great difficulty is to get in the three lower masts; for the upper ones are afterwards drawn up by means of tackle with comparative ease. The lower masts are fitted in three different ways, viz. by *sheers*, by a *sheer-hulk*, or by a *masting-house*.

The *sheers* used in masting vessels are two large poles, masts, or spars, erected on the vessel whose masts are to be fixed: the lower ends resting on thick planks laid along the sides of the deck, and the upper ends crossing each other, where they are securely lashed. The point where the two spars cross is exactly over the hole where the mast is to be dropped through the deck; and the spars are retained in this position by strong ropes attached to different parts of the ship. The mast, being floated to the side of the ship, is elevated entirely above deck by means of tackle connected with the sheers: and when it is brought with the lower end immediately over the hole in the deck, it is gently lowered into its place, passing down through the entire height of the vessel, and resting on the step or block fixed to the keelson. When one of the three masts is fixed in this way, the sheers are moved to the spot where the second is to be placed, and afterwards to the third. This is the general mode of masting merchant ships.

The *sheer-hulk* is an old man-of-war cut down to the lower deck, and fitted with an apparatus of sheers, tackle, &c. for masting the ships of the royal navy. There is a mast, a hundred and twenty feet in length, fixed in the hulk, and acting as a support to three or four stout spars or sheers which project obliquely from the side of the vessel. The tops of these sheers are at such a height, and project to such a distance from the side of the hulk, that the vessel which is to be masted can come beneath them, and be fitted with her lower masts, which are hoisted up to the requisite height by the sheers, and then lowered into the vessel. This is the general mode of masting ships of war.

The *masting-house* is a building erected expressly for the operation of masting ships. We are not aware whether there are others of the kind in this country;

but the one at Blackwall, formerly spoken of as once belonging to Mr. Perry, and as being now in the possession of the East India-Dock Company, is the place at which the ships from the Blackwall yard are masted. It is a square wooden building, erected on the western quay of the outward-bound dock, and having, at the top, a platform overhanging the water to the distance of several feet. The ship to be masted is floated into this dock from the Thames, and brought immediately beneath the overhanging platform. The masts are likewise floated in; and, after being hoisted up one by one by means of tackle connected with the platform, are lowered into their proper places in the ship.

Having thus spoken of the masting of a vessel (by which is usually understood the lower masts only), we will follow it back to the building-yard. We have before explained the difference between a building-slip and a dry-dock, and the manner in which a ship is brought into the latter. We will suppose it therefore to have been dry-docked, and to be ready for the process of *sheathing*, which is frequently done about this stage of the proceedings. The planks with which the timbers of a ship are covered, although the seams may be caulked with oakum and pitched, are not in a condition to be exposed to the sea without serious injury, and a casing or sheathing is therefore applied. Deal or fir plank, sheet lead, brown paper coated with tar, and sheet copper, are the substances which have been employed for this purpose; and experience has shown the last to be the best. Formerly so much grass, ooze, shells, sea-weed, &c. accumulated on and adhered to the bottom of a ship during a voyage, that the speed was impaired; and a process of breaming or graving was frequently required when she was in dock. This breaming consisted in melting the pitchy coating with which the bottom was covered, by holding kindled furze, faggots, or reeds under it, and thus loosening the matters which adhered to it, and which were subsequently scraped and brushed off. With the hope of rendering this process less frequently necessary, a sheathing of copper was proposed about eighty years ago; and the result was so satisfactory, that in 1783 the government ordered all ships belonging to the royal navy to be copper-bottomed. The practice spread from thence to the mercantile marine, and is now very generally followed.

The sheets of copper, or of an alloy of copper and zinc, for sheathing, are about four feet long by fourteen inches wide; the thickness being such that one square foot weighs from sixteen to thirty-two ounces, generally from twenty to twenty-eight. The copper is sometimes laid on the bare planking, but in other instances there is an interposed layer of paper, of felt, or of sheathing-board. The two latter are nailed on in their usual state; but if paper be employed, the sheets are first dipped in a mixture of melted tar and pitch, left to dry, and then nailed on. But whether these interposed layers are used or not, the copper sheets are put on in a pretty uniform plan. The sheets are pierced with holes, not only all round the edges, but at intervals of three or four inches over the whole surface. Each sheet laps about one inch over the adjoining sheet, and is fastened to the ship by means of flat-headed nails, made of the same metal as the sheets. Great regularity is observed in the arrangement of the sheets, so that a certain symmetry of appearance, as well as a durability, is attained.

The number of sheets of copper required for a large ship is very considerable. Nearly eight thousand square feet are required for each of the two vessels, the Agincourt and the Southampton, before alluded to. After two voyages to the East Indies, the coppering requires to be renewed; and the old copper is found to have lost three or four ounces of its weight in the square foot, by the action of sea-water, friction, and other causes. For re-coppering a vessel, the ship is docked, and stages or platforms built round her hull, on which the workmen may stand. With instruments adapted to the purpose, the men then strip the old copper from the ship's bottom; and it is sent away to the copper-works to be again melted up into a useful form. The surface of the planking being brought tolerably smooth, and prepared in one or other of the ways alluded to above, the nailing on of the sheets of copper proceeds in the same way as for a new vessel. In a ship-yard such as that at Blackwall, where many hands are employed, and the general arrangements are on a complete scale, a vessel is frequently sent out of dock thoroughly new-coppered within two days of the time when she entered it.

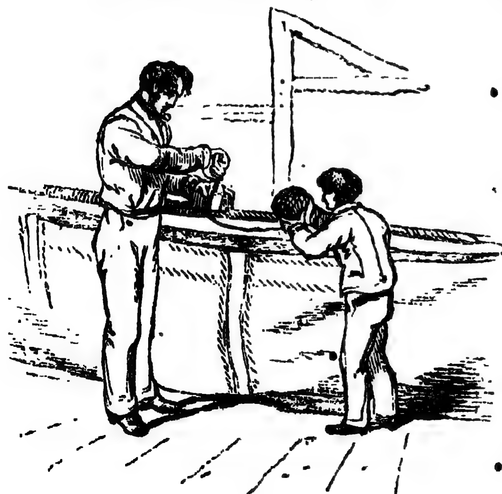
We must now say a little respecting the sails and rigging of a ship. There is a superintendant either engaged in or in some measure connected with ship-yards, called the 'ship's husband,' whose office is of much importance. The term is a remarkable one, but it is in character with the general tone in which a ship is regarded by those about her. A ship in the eyes of a seaman is a lady; there is probably no instance in which an inanimate object is regarded with more admiration—nay, even affection—than a gallant and well-fitted ship is by her crew; and a landsman may perhaps be permitted to say that there are few more worthy of it. The 'ship's husband' is one who is well acquainted not only with the arrangement and forms of the sails and rigging, but with the general details of seamanship, and with the services which are required from every sail, yard, and rope; and his office is to see that the ship—his bride—is decked out with all the trappings necessary for her personal appearance and for her future life on the waters. Although the two facts, that sails are intended for the propulsion of a ship by the wind, and that the rigging is intended chiefly for the management of these sails, may appear tolerably simple, yet the judicious arrangement of the several parts is a matter of great intricacy, and requires long study and experience.

The rigging of a ship, which is generally understood to imply the whole assemblage of ropes with which she is fitted, is of two kinds, one termed the *standing* and the other the *running* rigging. The former term is applied to all the shrouds, stays, back-stays, and other ropes which are employed to maintain the masts and bowsprit in their proper position, and which remain pretty nearly in a constant state whether the ship is in full sail or all the sails are furled; the latter term is applied to various ropes called braces, sheets, tacks, haliards, buntlines, &c., which are attached to different parts of the masts, yards, sails, and shrouds, and are employed principally in furling and unfurling the sails for the purposes of navigation. The whole of this rigging is made of hempen fibres, more or less saturated with tar. Those pieces of cordage which are devoted to the management of the anchors are termed *cables*; those which are employed in the general operations of rigging, and are more than an inch in circumference, are termed *ropes*; while cordage of smaller dimensions than this is generally called *lines*. But this classification is not sufficient for the purposes of the seaman; every cable, rope, and line has a distinctive name belonging to it, according to the place where or the purpose for which it is applied. The breast-rope, the davit-rope, the quest-rope, the heel-rope, the parral-rope, the bow-lines, clue-lines, bunt-lines, tow-lines, leech-lines—however unintelligible to general readers—are associated with perfectly definite ideas in the mind of a seaman, and have a regular scale of dimensions.

There are, we believe, no private ship-building

firms which make their own cordage. The government yards have ropewalks for this purpose; but in other cases the cordage is supplied by rope-makers, who confine their operations solely to this department. In our 495th number will be found a brief account of the process of rope-making; and we may therefore merely state here that the cordage is supplied to the riggers, in coils and bundles of various sizes, comprising the necessary lengths of all the different kinds of rope and line. The business of a ship's-rigger is distinct from that of a ship-builder; and the operations may or may not be carried on in a ship-building yard, according to the facilities which the yard presents and to other circumstances.

But wherever the rigging may be carried on, the operations are always nearly alike. The rigging-house is a place provided with tackle for stretching the ropes, and with the necessary instruments for attaching the blocks, rings, &c. required for fixing the ropes to the ship, and for managing the sails. The blocks here alluded to are a kind of wheel working in a wooden case, round the circumference of which a rope is passed to act as a pulley. They are sometimes made in the mast-making shop, and at other times by persons who follow that line of business only. The outer case or 'shell' of a block is made of elm or ash, and after being rounded somewhat to an oval form, various perforations are made through it. One of these is for the reception of a pin or spindle, made of lignum-vitæ, or some other hard wood, or of iron; and others are for the reception of the wheels or 'sheaves,' which vary from one to eight in number in each block, and which are made of lignum-vitæ. The adjustment of the ropes to these blocks, to iron rings and hooks, and to each other, devolves upon the rigger, who is provided with instruments for cutting, stretching, bending, and tyeing the ropes in their proper places. The cordage employed for a large East Indiaman weighs several tons, and some of the ropes are four inches in diameter: the bending and fixing of such ropes as these, therefore, require powerful implements. Among the operations which much of the cordage undergoes before it is taken to the ship, is that of 'serving.' This consists in binding a smaller rope very tightly round it, in order to preserve it both from rotting and from any friction to which it may be exposed. The substance thus bound round the rope is not necessarily a made-rope of smaller diameter, but is sometimes formed of old canvas, mat, plat, hide, or spun-yarn, according to circumstances. All these substances receive the common name of 'service;' and the mode



of proceeding may be understood by a description of the process of 'serving' a rope with spun-yarn. The yarn might be simply twisted by hand round the rope, but the necessary tightness and compactness would not be thus attained: and a mallet is used instead. The rope being stretched out horizontally, a man provided with a mallet, and a boy holding a ball of spun-yarn, stand opposite to each other at about two feet distance. The mallet, which has a concave groove on the side opposite to the handle, is laid on the rope, handle uppermost. Two or three turns of the spun-yarn are passed tightly round the rope, and round the body of the mallet; and while the boy passes the ball of yarn continually round the rope, the man, at the same time, and in the same direction, winds on the yarn by means of the mallet, whose handle, acting as a lever, strains every turn about the rope as firmly as possible. The yarn then appears like a screw whose threads pass almost transversely round the rope. The annexed cut shows the position occupied by the man and boy while 'serving' a rope.

While describing the process of masting a vessel, we stated that it is only the lower masts and the bowsprit which are fitted by the sheers, the sheer-hulk, or the masting-house. The upper masts are not drawn up till the stage in the proceedings at which we are now arrived. The lower masts require to be secured by shrouds, &c. before the others are adjusted to them, so that the raising of the latter takes place after the rigging of the ship has been commenced. We have stated that the topmast surmounts the lower mast, and that the topgallant-mast surmounts both; but the masts are not actually joined end to end, in the usual sense of this term. A few feet below the upper end of the lower mast, a kind of platform is erected, on which the topmast rests, a little in front of the lower mast, so that the two do not actually touch in any part. This platform is called the 'top,' and is supported by various timbers termed cross-trees and tressel-trees. The topmast is drawn up to its place by means of tackle, and fixed securely to the platform, as also to a piece of timber projecting forwards from the extreme top of the lower mast. The platform serves not only as a support to the topmast, but also as a place of attachment for the shrouds by which it is upheld. When the topmast has been raised and properly secured in its place, the topgallant-mast is similarly raised, and adjusted to the upper end of the latter; and in some of the ships of war there is still a fourth mast, of very slender dimensions, called the topgallant-royal-mast, raised highest of all; but it is generally a mere prolongation of the topgallant-mast above the rigging, instead of being a separate and distinct mast. The bowsprit is, like the mast, provided with a kind of topmast or top-bowsprit, by which its effective length is increased. In this manner the vessel is gradually provided with all her masts and yards; the shrouds, stays, and other standing rigging being adjusted to their places at the same time. The yards too, or the ponderous horizontal spars by which the sails are held, are introduced into the vessel one by one, and attached to the masts to which they belong. Whoever has seen a representation of a ship with her sails furled, must have remarked the vast number of ropes and blocks which connect the various parts of the masts and yards together, and which quite baffle the eye in an attempt to single them out one from another. All these ropes have certain definite offices to perform, and are placed in their respective positions by the rigger.

Meanwhile, the sail-makers have been at work, preparing their important share of the ship's fittings. We stated, while giving a general description of the ship-yard which is the object of these two papers, that

the sail-loft is situated near the mould-loft. It is an oblong apartment, sixty or seventy feet in length, and provided with tackle for stretching and drawing out the ropes which are sewn to the edges of the sails. During the principal parts of the operations, the sail-makers are seated on stools, of which several are placed in different parts of the loft, each provided with little receptacles for the tools which he requires.

The canvas used in making sails is a very stout material, woven, either in England or Scotland, from hemp brought from Russia, and purchased in the form of rolls called 'bolts,' each bolt containing about forty yards of canvas, twenty-four inches in width. There are six or seven different qualities of canvas, according to the size and position of the sail to be made; and each quality has a particular number attached to it, and must have a certain weight per square foot; thus, in the royal navy, a bolt of No. 1 canvas, containing thirty-eight yards, must weigh forty-four pounds, whereas No. 7 weighs only about half as much; the intermediate numbers having intermediate weights. The canvas, though woven of stout yarn, is very regular and uniform in its appearance, and of a tolerably white tint.

The first operation is, to cut up a sufficient quantity of canvas to make a sail; and as the width of the canvas, whatever be its quality, is only two feet, a great number of breadths become necessary. The mainsail of an East-Indiaman contains nearly seven hundred yards of canvas; while the whole suit of sails requires as much as nine thousand yards. Some of the sails are nearly rectangular, some triangular, some of the edges are straight, some hollowed, and the foreman has to pay especial attention to these circumstances in arranging the breadths of canvas. To cut a piece of canvas directly across, the weft or cross-thread is taken as a guide; while an oblique section is marked out by a certain deviation from the direction of the weft. The canvas is not cut by shears or scissors; but a fold being made in the required direction, previously marked with chalk or pencil, two men hold the two ends of the fold, and one of them rips up the canvas with a sharp knife.

The canvas being cut, the sail-makers then proceed to work it up. Their labour consists not only in seaming up the numerous breadths, so as to give the requisite dimensions to the sail, but also in sewing on rope, called 'bolt-rope,' round every edge of every sail: were the sail not strengthened in this manner, it would neither bear the strain of the wind, nor furnish fastenings for the ropes by which it is worked. The seaming and sewing are effected with large three-sided needles, of seven or eight different kinds, which are threaded with sewing-twine made for the purpose, and having from two to four hundred fathoms to the pound weight. The skeins of twine, previous to being used, are dipped into a trough containing melted tar, grease, and oil, and are twisted round in such a manner as to force the composition completely through the twine, and to expel the superfluous portion. The twine, when dry, is wound into balls, or on reels, ready for the workman.

The sail-maker, seated on his low stool, holds the canvas before him in a convenient position for working. On his thumb he wears a thumb-stall, consisting of an iron, horn, or leathern ferrule, against which the thread passes, enabling him to tighten the stitches without hurting his thumb. He has also a little contrivance called a 'palm,' consisting of a flat round piece of iron, chequered or grooved on its surface, and intended to act as a thimble: it is sewn to a piece of leather, which enables it to be conveniently attached to the palm of the right hand. The breadths of canvas are joined by stitching or 'seaming,' the stitches having a degree of closeness well agreed upon between master and man, and such as to include rather above a hundred stitches in a yard of length. The seam or overlapping is from an inch to an inch and a half in



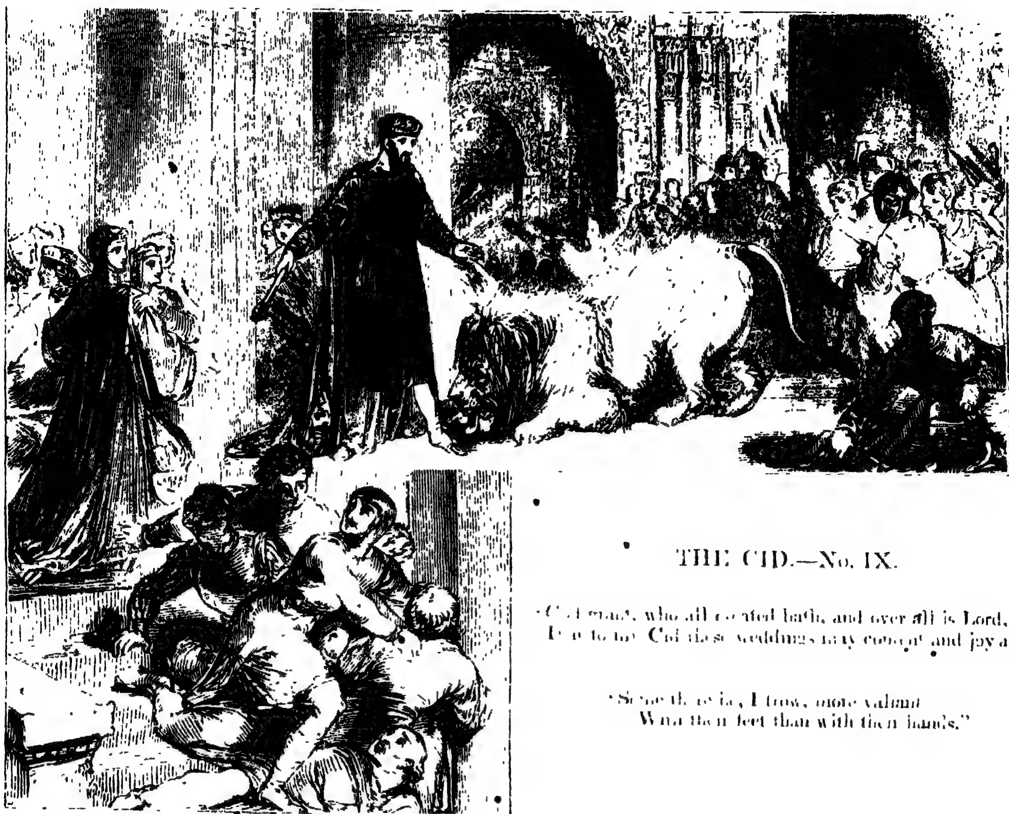
width. Besides the stitching of the seams, various pieces of canvas called linings, tablings, and bands are stitched on the sail in different directions, for the sake of strengthening it at those parts which are most liable to strain. There are also many small holes to be made in some of the sails, for the reception of short pieces of cordage necessary in reefing the sail.

The bolt-rope which is fastened to the edge of the sails is carefully covered before it is used, to preserve it from rotting: it is first 'parcelled,' that is, encircled with narrow pieces of old canvas; then well tarred; and afterwards 'served' or bound round with a close coil of spun-yarn. The ropes are then sewn to the edges of the sail in a very careful manner; arrangements being at the same time made for the formation of numerous loops, eyes, and other mechanism necessary for the subsequent guidance of the sail. Different parts of the bolt-rope receive different names according to their position: that which binds the bottom edge is the foot-rope; at the top, the head-rope; at the sides, the leech-rope.

Thus the operation of the sail-maker proceeds, until the whole suit of sails, generally about forty in number, for a ship are made. So well arranged are the plans by which the canvas is cut for the sails, that not more than three or four yards are actually wasted in cutting up the nine thousand yards for a large ship.

When the sails are finished, they are adjusted to their proper places in the ship by means of the ropes which govern them. The anchors (a brief account of the making of which was given in our Nos. 537, 538), the colours, the interior fittings and furniture, and a large variety of matters which we cannot even enumerate, being also completed—the lady, in fact, being decked out in her complete attire—she is sent out of dock to the bosom of the waters, where, to use the language of Canning, she lies "majestically reposing on her own shadow," till the hour of sailing arrives.

If the reader has expected to become a veritable ship-builder by the perusal of this sketch, he will doubtless be disappointed; but if it merely conveys to him some idea of the vastness, the variety, and the ingenuity of the operations involved in the construction of a ship, free from the embarrassment of the technical details necessary in a scientific treatise, the proposed object will have been attained.



THE CID.—No. IX.

"God grant, who all created hath, and over all is Lord,
Unto the Cid these weddings may comfort and joy afford."
Poem

"Some there be, I trow, more valiant
With their feet than with their hands."



So widely was the renown of the Cid now spread abroad through the world, that the Sultan of the East, the renowned Soliman, hearing of his valorous deeds, sent an ambassador to Valencia with costly presents of silks, purple and scarlet cloth, incense and myrrh, and gold and silver ornaments, in token of his friendship, charging him to say, "As the Prophet liveth," saith my lord, "he would give his royal crown could he but behold thee in his land." With great courtesy did the Cid receive the ambassador, replying, that were his lord a Christian, he would joyfully visit him. Then he showed him all his wealth and power, and the pagan returned home marvelling greatly at his abundant riches. According to the Chronicle, the Sultan was induced to despatch this embassy, not so much from disinterested admiration of the Cid's heroism, as to deter him from joining the princes of Europe in the crusade which had been proclaimed against him.

At this time also the two counts of Carrion were induced, by the great fame and wealth of the Cid, to beseech the king to give them to wife his two daughters, Doña Elvira and Doña Sol. Alfonso wrote to the Cid, asking him to meet him at Requena, to consult with him on the matter. Rodrigo did not much relish the proposal, thinking the counts too haughty and courtier-like for his sons-in-law; but he advised with Ximena, "for in such-like matters," says the romance, with much truth, "women are wont to be of great importance."

"Out then spake the dame Ximena,
'Truth, my Cid, no wish have I
To ally me with these lordlings,
Though they be of lineage high.

But I would thou in this matter
Do as best it seemeth thee;
'Twixt thee and the king, of counsel
Good and wise no lack can be.'"

"When was ever seen in Castille so many choice mules, so many swift palfreys, so many strong and sure-footed chargers, so many gay pennons fluttering from lance-heads, so many shields embossed with gold and silver, so many rich garments of silk and fur, as when the Good One of Bibar met Alfonso the Castilian" at Requena? "He who in a lucky hour was born" cast himself at the king's feet, but Alfonso raised him up, telling him to kiss his hands and not his feet. Mass was then said, and the king opened the matter of the marriage. The Cid returned thanks to his sovereign for the honor intended to be conferred upon him, and added that he, his daughters, and all he possessed, were in the king's hands, to be dealt with as it pleased him; "for whatever his lord wished, who was so much worthier than he, that did he wish also." Whereon Alfonso ordered 8000 marks of silver to be given to the sisters as their dowry, and deputed Don Alvar Fañez, their kinsman, to act in his stead in giving away the brides. Then he commanded the Counts to kiss the Cid's hands and pay him homage; and the Cid departed with them for Valencia, having first invited all the nobles to be present at the ceremony. The double wedding took place accordingly, and for eight

days all was feasting, dancing, jousting, and bull fighting within the city of Valencia. The Cid, according to the custom of those days, gave gifts of great value to the lords and magnates present; for as the romance sagaciously observes,

> "He who 's great in deeds of battle,
> Will be great in all beside."

These two counts of Carrion were, however, sad cravens; not worthy to be the sons-in-law of the Cid. They chanced one day to be sitting joking with Don Bermudo, one of the Cid's nephews, in the same room where Rodrigo himself lay stretched on his couch in an after-dinner slumber, when

> "Lo, loud outcries rent the palace,
> Shook its walls and turrets high!
> 'Ware the lion! ware the lion!
> He is loose!' was heard the cry.
>
> Don Bermudo nought was moved,
> Nought his soul could terrify;
> But the brother counts of Carrion
> 'Gan right speedily to fly."

Fernan Gonzales, the younger, crept for protection under the Cid's couch, and in so doing burst his garment across the shoulders: while Diego his brother betook himself for refuge to a dirty closet hard by, or, as the Poem says, crept beneath the beam of a wine-press. Bermudo drew his sword and put himself on his guard. The uproar awoke the Cid, who started from his couch just as the furious beast, followed by a number of armed men, entered the hall. To the astonishment of all, the lion came crouching and fawning to the feet of the Cid. The romance hints that this was a miracle. It was certainly not less marvellous that Rodrigo threw his arms about the beast, and "with a thousand caresses" bore him off to his den without receiving any injury. Returning to the hall, he inquired for his sons-in-law; and when they were dragged ignominiously from their places of refuge, their bridal gear woefully disarranged and soiled, "never was beheld such merriment as ran through the court." The Cid, gazing on each in turn, was for some moments unable to speak, through the excess of his astonishment and indignation.

> "'God! are these your wedding garments?
> In the devil's name, what fright,—
> Say what terror hath possess'd ye,
> That ye thus should take to flight?
>
> Had ye not your weapons by ye;
> Why then fled ye in such haste?
> Was the Cid not here:—then surely
> Ye could stand and see the beast.
>
> Of the king ye sought my daughters,
> Thinking they had gold and land;
> God wot, I did never choose ye,
> But I bow'd to his command.
>
> Are ye then the sons I needed,
> To protect me when I'm old?
> Zounds! a good old age will mine be,
> Since ye are as women bold.'"

According to the Poem, the Cid did not reproach the counts, and suppressed the mirth of his knights, when they were disposed to be merry at their expense. However this be, the Counts were stung with shame, and secretly swore to obtain revenge. The Cid, with his wonted generosity, seems soon to have forgiven them; for in a council of war convoked shortly after, on the occasion of Bucar, king of Morocco, beleaguering the city with a vast host, he made them sit at his right hand, though, while he, as the romance beautifully expresses it,

> "With excess of valor trembled,
> They with utter fear did quake."

The Moorish king sent a herald to Valencia to demand the immediate surrender of the city. This was the Cid's reply:—

> "'Let your king prepare his battle,
> I shall straightway order mine;
> Right dear hath Valencia cost me,
> Think not I will it resign.
>
> Hard the strife, and sore the slaughter,
> But I won the victory,
> Thanks to God and to the valor
> Of Castillian chivalry!'"

As Ximena with her own hands was arming her lord for the field, he gave her these parting instructions:—

> "'If with deadly wounds in battle,
> I this day my breath resign;
> To San Pedro de Cardeña
> Bear me straight, Ximena mine.
>
> Wail me not, lest some base panic
> On my chiefless warriors seize;
> But amid the call to battle
> Make my funeral obsequies.
>
> This, my lov'd Tizon, whose gleamings
> Every foeman's heart appal;
> Never let it lose its glory,
> Ne'er to hands of women fall.
>
> Should God will that Babieca
> Quit the strife alone this day;
> And without his lord returning,
> At thy gate aloud should neigh;
>
> Open to him and caress him,
> Let him well be hous'd and fed;
> He who well his master serveth,
> Right well should be guerdoned.
>
> Dear one, give me now thy blessing!
> Dry thine eyes and cease to mourn!'
> Then my Cid, he spurr'd to battle—
> 'Grant him, Heaven, a safe return!'"

The Cid, knowing the cowardice of his sons-in-law, advised them to remain within the city, and not sally forth with him to the war; but they angrily announced their intention to accompany him. During the combat a bold and stalwart Moor came up, lance in hand, to assail the younger of the Counts, who dared not abide his onset, but instantly turned and fled. None witnessed his cowardice but Don Ordoño, the Cid's nephew, and he pursued the Moor, slew him, spoiled him of his horse and arms, and generously offered them to the Count.

> "'Take this steed and spoil, Don Fernan,
> Say that thou the Moor didst slay;
> On my knightly troth I pledge thee,
> Never will I this gainsay;
>
> Saving thou to speak compel me,
> None shall ever know the truth.'"

The Count was base enough to accept this offer of second-hand glory, and was highly extolled for his valour by the Cid, who came up at the instant. He stroked his beard, and said, "I thank Christ, Lord of the world, that my sons-in-law have fought so nobly with me in the field." Victory, as usual, declared for "him who in a lucky hour girt the sword," and my Cid returned to Valencia with eighteen Moorish kings as trophies of his prowess, and with the renowned sword Tizona, "worth more than a thousand marks of gold," which he had won from the royal grasp of Bucar, who narrowly escaped swelling the number of his captives.*

The brother Counts had meanwhile been plotting

* Though a few of the romances agree with the Chronicle and Poem in stating that Tizona was won from Bucar at this time, the rest make frequent mention of it as wielded by our hero during the greater portion of his life. Such anachronisms are among the natural faults of ballad history.

revenge against the Cid, and no less cruel than cowardly, they resolved to take it on the persons of his daughters. They demanded their wives, that they might depart with them to their own land. Rodrigo committed his daughters to them; but having seen by the flight of birds, that the nuptials would not be propitious, he charged them to treat them with all gentleness and kindness. This the Counts promised; and the Cid, who had begun to hope better things of their courage, gave them as parting gifts his two swords—Tizona and Colada, which he called "the best of all his goods," together with chains of gold of costly Arabian workmanship, presents to him from the Sultan, vessels of gold and silver, and many mules and war-horses. He and his knights also accompanied them for the distance of a league from the city.

"The Cid he parted from his daughters,
Nought could he his grief disguise;
As he clasp'd them to his bosom,
Tears did stream from out his eyes."

And he exclaimed, "Of a truth, ye tear from me the very cords of my heart!" He had a presentiment of some evil about to befall them, and he charged his nephew Ordoño to disguise himself and follow the Counts. These craven knights continued their journey, and were everywhere well received for the Cid's sake. Arriving at length at Tormes, which was beyond his territories, they came to a halt, and ordered all their train to go forward, saying, that they and their wives would follow anon. Then entering a thick oak wood, hard by the road, they dragged their wives from their mules, tore all the clothes from their backs, seized them by the hair and dragged them to and fro over the rough ground, buffeted and lashed their naked flesh with their saddle-girths, kicked them barbarously with their rowelled heels, till their tender bodies, "white as the sun," were bathed in blood—all the while pouring forth the most opprobrious language—and finally lashed them to trees, saying, as they left them to die of starvation, or to be torn to pieces by the wild beasts of the forest,

"'Vengeance on your cursed sire
Have we now obtain'd in ye;
We have done with ye—ye are not
Fit to mate with such as we.'"

They then rode after their people, and answered their inquiries after the ladies, by saying, "they are well cared for."

The poor women rent the air with their shrieks, calling upon Heaven for vengeance,—

"It was not the wounds and lashes—
Not the pain that caus'd their woe:
'Twas the shame, the foul dishonor—
Deadliest ills that women know."

Don Ordoño, who was following the Counts at a distance in the garb of a pilgrim, heard their cries and entered the wood. On beholding his cousins in such a state, he rent his clothes, tore his hair, and thundered out a thousand curses on the heads of the recreant Counts. He untied the ladies, made them a couch of leaves and grass, threw his own cloak over them, and left them to seek assistance, saying, with tears in his eyes, as he strove to comfort them,—

"'Cheer up, cousins, be not downcast,
Heaven's will must aye be done;
Wherefore this thing hath befallen ye,
It is known to God alone.

Lay nought to your sire, I pray ye,
He obey'd the king's command;
Your sire he is the Cid, fair ladies,
Leave your honor in his hands.'"

He soon returned with an honest peasant, who conveyed them to his own cot, where his wife and daughters tended them with great care and tenderness.

Don Ordoño straightway returned to Valencia and told his tale. Rodrigo restrained all expression of his feelings:

"My Cid he seemed nothing moved,
Though his grief was sore and deep:
Him who looketh for his vengeance,
It behoveth not to weep."

But Ximena gave vent to her sorrow in floods of tears. The Cid consoled her, swearing by his beard, "which none had ever cut," that she should have speedy vengeance, and despatched messengers forthwith to the king, demanding justice. According to another romance, the Cid went in person to the royal palace at Leon. It was the hour of mid-day by the clock, and the king was seated at dinner with his nobles, when the Cid, pale as death, and in complete armour, strode into the hall, and fixing his eyes on the king, exclaimed,—

"'Justice may I have of Heaven,
If I can have none of thee!'"

All the nobles ceased to eat, in amazement at these words of the Cid; his friends moved by anxiety, his foes by terror. After a pause he continued,—

"'Vengeance, king! I pray thee vengeance!
Do I ask this right in vain?
I have oft in blood of traitors
Wash'd mine honor from all stain;
But to thee I would have vengeance,
For to thee it doth pertain.

Lo! my daughters have been outrag'd!
For thine own, thy kingdom's sake,
Look, Alfonso, to mine honor!
Vengeance thou or I must take.

If I have aggriev'd these traitors,
Let me meet them in the fight,—
This right arm and this good faulchion
Soon shall show ye who hath right.'"

King Alfonso was exceeding wrathful when he heard this, and to confront the Counts with the Cid, he commanded that a Cortes should be proclaimed to be held at Toledo, and whosoever of his nobles did not obey the summons within thirty days (or three months, as the Chronicle has it), should be accounted a traitor and a rebel.

Salt-Mine at Tuz Kon.—The salt occurs in a powerful bed, the extent of which it was impossible to judge of, as none of the actual shafts go to its floor, although many display its roof. This bed occurs in a stiff yellow clay, sometimes bluish coloured, with abundant crystals of gypsum, which is superimposed upon it in horizontal beds, a little to the east of the mine. There are about seven shafts now open: these are distributed, in a rather curious manner, round the sides of a pit formed by the excavations of former years: and they run in to various depths, from twenty to one hundred feet. The salt bed was about forty feet below the level of the hill; the galleries are carried down at a high angle of inclination; and the salt is taken out in baskets, carried up rude stairs cut out of the clay. There was also a shaft at the bottom of the pit, but it has long ago fallen in, and is now the grand receptacle for rain water. While Mr. Russell and I were at the mines, there came on a severe thunder-storm: torrents of water came pouring, in a few minutes, into the pit, from several sides at once; the soft clay gave way in large masses, and several slips occurred round the sides of the pit. It appears very likely that works so carelessly carried on, will, some day or other, be overwhelmed all at once.—*Expedition to Kurdistan, by W. Ainsworth, in Royal Geog. Journal*, vol. x., part 3.



House in which Bewick was born

LIFE OF BEWICK.

THE materials of the following paper are derived from 'A Treatise on Wood-Engraving,' illustrated with numerous splendid wood-cuts by Mr. Jackson. The name of Mr. Jackson is too well known as an artist to the subscribers of the 'Penny Magazine' to need any panegyric here. It recals the memory of some of those copies from the finest works of the great painters, which showed more than anything else the wonderful powers of the not long before despised "wood-cut." Bewick was Mr. Jackson's master, and to him we are indebted for the revival of wood-engraving in this country. By Mr. Jackson's permission we are enabled to illustrate this article by some wood-cuts from his highly interesting and valuable work.*

This distinguished wood-engraver, whose works will be admired as long as truth and nature shall continue to charm, was born on the 10th or 11th of August, 1753, at Cherry-burn, in the county of Northumberland, but on the south side of the Tyne, about twelve miles westward of Newcastle. His father rented a small land-sale colliery at Micklay-bank, in the neighbourhood of his dwelling, and it is said that, when a boy, the future wood-engraver sometimes worked in the pit. At a proper age he was sent as day-scholar to a school kept by the Rev. Christopher Gregson at Ovingham, on the opposite side of the Tyne. The parsonage-house, in which Mr. Gregson lived, is pleasantly situated on the edge of a sloping bank immediately above the river; and many reminiscences of the place are to be found in Bewick's cuts; the gate at the entrance is introduced, with trifling variations, in three or four different subjects; and a person acquainted with the neighbourhood will easily recognise in his tail-pieces several other local sketches of a similar kind.

In the time of the Rev. James Birkett, Mr. Gregson's successor, Ovingham school had the character of being one of the best private schools in the county; and several gentlemen, whose talents reflect credit on their teacher, received their education there.

Bewick's school acquirements probably did not extend beyond English reading, writing, and arithmetic; for though he knew a little of Latin, he does not appear to have ever received any instructions in that language. In a letter dated 18th of April, 1803, addressed to Mr. Christopher Gregson, London, a son of his old master, introducing an artist of the name of Murphy, who had painted his portrait, Bewick humorously alludes to his beauty when a boy:—"I do not imagine, at your time of life, my dear friend, that you will be solicitous about forming new acquaintances; but it may not, perhaps, be putting you much out of the way to show any little civilities to Mr. Murphy during his stay in London. He has, on his own account, taken my portrait, and I dare say will be desirous to show you it the first opportunity; when you see it you will no doubt conclude that T. B. is turning bonnyer and bonnyer in his old days, but indeed you cannot help knowing this, and also that there were great indications of its turning out so long since."

Bewick, having shown a taste for drawing, was placed by his father as an apprentice with Mr. Ralph Beilby, an engraver, living in Newcastle, to whom, on the 1st of October, 1767, he was bound for a term of seven years. Mr. Beilby was not a wood-engraver; and his business in the copper-plate line was of a kind which did not allow of much scope for the display of artistic talents. He engraved copper-plates for books when any by chance were offered to him; and he also executed brass plates for doors, with the names of the owners handsomely filled up, after the manner of the old 'niellos,' with black sealing-wax.

Bewick's attention appears to have been first directed to wood-engraving in consequence of his master having been employed by the late Dr. Charles Hutton, then a schoolmaster in Newcastle, to engrave on wood the diagrams for his 'Treatise on Mensuration.' The printing of this work was commenced in 1768, and was completed in 1770. The engraving of the diagrams was committed to Bewick, who is said to have invented a graver with a fine groove at the point, which enabled him to cut the outlines by a single operation. Bewick, during his apprenticeship, paid ninepence a week for his lodgings in Newcastle, and usually received a brown loaf every week from Cherry-burn. On the expiration of his apprenticeship, he returned to his father's house at Cherry-burn, but still continued to work for Mr. Beilby. About this time he seems to have formed the resolution of applying himself exclu-

* 'Treatise on Wood-Engraving,' pp. 559-605.

sively in future to wood-engraving; and with this view to have executed several cuts as specimens of his ability. In 1775 he received a premium from the Society for the Encouragement of Arts and Manufactures for a cut of the Huntsman and the Old Hound, which he probably engraved when living at Cherryburn, after leaving Mr. Beilby. The following is a facsimile of this cut, which was first printed in an edition of Gay's 'Fables,' published by T. Saint, Newcastle, 1779.



[The Huntsman and Old Hound.]

In 1776, when on a visit to some of his relations in Cumberland, he availed himself of the opportunity of visiting the lakes; and in after-life he used frequently to speak in terms of admiration of the beauty of the white-washed slate-covered cottages on the banks of some of the lakes. His tour was made on foot, with a stick in his hand and a wallet at his back; and it has been supposed that in a tail-piece (to be found at page 177 of the first volume of his 'British Birds,' first edition, 1797), he has introduced a sketch of himself in his travelling costume, drinking out of what he himself would have called the *flipe* of his hat. In the same year he went to London, where he arrived on the 1st of October. But after a short sojourn of a twelvemonth, he returned to Newcastle, and entered into partnership with his former master, Mr. Ralph Beilby.

Bewick did not like London; and he always advised his former pupils and north-country friends to leave the "province covered with houses" as soon as they could, and return to the country, there to enjoy the beauties of nature, fresh air, and content. In the letter to his old schoolfellow Mr. Christopher Gregson, previously quoted, he thus expresses his opinion of London life: "Ever since you paid your last visit to the north, I have often been thinking upon you, and wishing that you would *lap up*, and leave the metropolis, to enjoy the fruits of your hard-earned industry on the banks of the Tyne, where you are so much respected, both on your own account and on that of those that are gone. Indeed I wonder how you can think of turmoiling yourself to the end of the chapter, and let the opportunity slip of contemplating at your ease the beauties of nature, so bountifully spread out to enlighten, to captivate, and to cheer the heart of man. For my part I am still of the same mind that I was in when in London, and that is, I would rather be herding sheep on Mickley-bank top than remain in London, although for doing so I was to be made the premier of England."

Bewick was truly a *country* man; he felt that it was better "to hear the lark sing than the mouse cheep;" for though no person was capable of closer application to his art when within doors, he loved to spend his hours of relaxation in the open air, studying the character of beasts and birds in their natural state; and diligently noting those little incidents and traits of country life which give so great an interest to many of his tail-pieces.

[To be concluded in our next.]



[Parsonage at Ovingham.]

STALACTITES AND STALAGMITES.

There are two terms used in mineralogy, *stalactite* and *stalagmite*, applied to a very singular phenomenon which is observed under various forms in different parts of the world. Both terms are derived from the Greek name for a *drop*, and are applied in the following manner:—Stalactites are the pendent protuberances from the roof or sides of caverns, formed by the deposition of calcareous or other earths, from the water which percolates through rocks; while stalagmites are the depositions of calcareous earth formed in the floors of caverns by the water which drops from the roofs. The two therefore do not differ so much in their nature and formation as in the circumstance of the positions which they occupy.

Since waters rising from beds of limestone are so overcharged with calcareous earth as to form an incrustation of stone round any substance that is immersed in them for a short time, these waters are said to have a petrifying or *stone-forming* property: and the stalactites and stalagmites are but extensions of the same operation. Water dropping from some projecting point, or percolating through a crevice, deposits a portion of its calcareous contents: and this deposition is enlarged by succeeding drops, until it assumes the form either of a pendent icicle or of a mass on the ground. In some instances the formation has been so rapid as to fill up the whole of an excavation or grotto in the course of time.

The deposition of earthy matter is easily accounted for, when the water is known to be loaded with it: but there are peculiar appearances in the structure of stalactites which are not so easily explained. In some a radiated, diverging, crystalline structure is observed; in others the structure is more lamellated; and in others again, the process from the radiated to the regular crystalline structure may be seen in the same specimen. From this it has been inferred, that the particles of stalactite, after they had been mechanically deposited, and formed into a solid, were capable of a certain degree of motion, which permitted their crystalline arrangement to proceed to its ultimate form. Some stalactites have occasionally been found which were tubular; others, solid within, are covered externally with minute crystals, and are sometimes terminated by a knob resembling a mushroom.

In some parts of the earth caverns are found lined and roofed with stalactites, formed at some past but unknown period; while in other parts springs are now flowing which leave a calcareous deposit, and thus show the mode in which other deposits may have been formed. At Knaresborough, in Yorkshire, is a spring possessing powerful petrifying qualities. It rises on the slope of a hill, at the foot of a limestone rock, and after running about twenty yards towards the river Nid, it spreads itself over the top of a rock, from whence it trickles down in more than twenty places, dropping very fast, and creating a musical kind of tinkling, due, probably, to the concavity of the rock, which projects in a circular curve from the bottom to the top, the brow overhanging the base nearly fifteen feet. The spring is supposed to emit about twenty gallons per minute; and the water abounds with fine calcareous particles, which it deposits when in languid motion, and leaves an incrustation on the bodies that it meets with in trickling slowly amid the many obstacles that impede its course.

In the Derbyshire caves, of which so much has been written, there are many striking proofs of the effects resulting from the subsidence of calcareous matters from water. The calcareous covering of the peak contains a great number of caves of different sizes, most of them abounding with stalactites of various forms and colours. Some of these stalactites are of a beautiful white, and others are streaked with yellow, grey, and milk-colour veins. Some vases and other trinkets are occasionally made from the choicest specimens. These may be taken as evidence of effects produced long since; but the same county furnishes instances of petrifying waters now in active existence. The warm springs at Matlock form vast accumulations of petrifactions, which are soft before exposure to the air, but become very hard by degrees. Whilst the waters retain their warmth and motion, few or no petrifactions are formed. It was stated by Dr. Short some years ago, that all the warm water dropping from the roofs of small grottoes and caves at this spot formed little prisms or pillars of various shapes; but that the water which was stationary, and left a deposit which encrusted such small objects as moss, grass, leaves, twigs, &c., in time destroyed the bodies on which the deposition was made, the deposit retaining the shape which it had assumed.

The Geysers or hot-springs of Iceland furnish other examples of a durable solid being formed from the deposition of earthy matters by the water which contains them. The silicious depositions of the water of the Great Geyser have formed for it a basin about fifty feet in diameter, in the centre of which is a cylindrical pipe or pit ten feet in diameter. Through this pit, at variable intervals of time, large masses of hot water burst out, gradually filling the pit and the basin, and then partially flowing over the edge. At intervals of some hours, when the basin is full, explosions are heard from below, like the firing of cannon at a distance; and at the same time a tremulous motion of the ground is felt around the basin. After many strange convulsions and upward bursts of water, which seem to indicate some powerful force acting from within, the whole subsides, and in a few minutes not only the basin, but also the pipe or pit is found to be empty of water. The petrifying quality of the water seems therefore to have shown itself in this way: that a subterranean force having made a rent in the ground, through which hot water was occasionally propelled, the water gradually deposited a sediment which built up, as it were, a cistern round the margin of the rent.

It gives rise to some confusion when such processes as these are termed *petrifaction*, because this term is more particularly applied to the formation of fossil organic remains: yet there is no other term—excepting perhaps *lapidification*, nearly synonymous to it—which so well expresses the sense to be conveyed. Leaving the question of nomenclature, however, and confining ourselves to the phenomenon itself, it is evident that the formation of hard substances from the sediment of water, in Iceland, at Matlock, at Knaresborough, and other places, is traceable to the same causes as those which, in some past period, produced the stalactites and stalagmites of grottoes and caverns. Without, therefore, adducing any further examples of petrifying springs, we will give a brief account of the stalactites at Antiparos, the most beautiful perhaps anywhere to be found.

Antiparos is a small island in the Grecian Archipelago, about sixteen miles in circumference. Near the summit of a lofty hill is a large area, scooped out of a rock, on one side of which is seen a perpendicular face or wall about twenty feet high, nearly covered with columns of stalactites. Behind these columns is an entrance to the celebrated grotto, which has attracted the attention of travellers from all countries. After descending obliquely to a certain depth, the traveller arrives at a perpendicular shaft, down which he proceeds by the aid of ropes held by the guides. At the bottom of this perpendicular descent, the footing again proceeds in an oblique direction, the descent of which

brings the visitor to a small projection of rock, from whence he passes into the principal chamber, cavern, or grotto. This grotto is the most magnificent spectacle of the kind anywhere presented. It measures three hundred feet long by two hundred and fifty broad; and the whole of the roof, walls or sides, and floor are covered with a dazzling and snowy white incrustation. Columnar icicles, if the term may be used, hang down from the roof to a depth of twenty-five feet; others extend from the roof to the floor, equal in diameter to the mast of a ship of war. A large mass of stalactite, which divides the principal chamber from a smaller one, is rendered remarkable by the number of tapering columns and spires which shoot up from it. This mass is called the *altar*, from a singular festival which was held in the grotto in 1673, by the Marquis de Nointel, ambassador from France to the Turkish sultan. The marquis celebrated the festival of Christmas within the grotto itself, which he illuminated by a hundred large flambeaux and four thousand lamps, the light from which produced a most brilliant and dazzling effect. Five hundred persons attended; and at midnight mass was celebrated, the block of stalactite serving as an altar. Magni, an Italian traveller, was told by some peasants that a giant inhabited the mouth of the cavern: and he went to satisfy his curiosity in the matter. After encountering the difficulties of the descent, he says, "We quickly perceived that what the ignorant natives called a giant was nothing more than a sparry concretion, formed by the water dripping from the roof of the cave, and by degrees hardening into a figure that their fears had transformed into a monster. Incited by this extraordinary appearance, we proceeded still farther, in quest of new adventures in this subterranean abode. As we advanced, new wonders offered themselves: the spars, formed into trees and shrubs, presented a kind of petrified grove, some white, some green, and all receding in due perspective. They struck us with the more amazement, as we knew them to be the mere productions of nature, who, hitherto in solitude, had in her playful moments dressed out the scene for her own amusement."

The production of these stalactites has been thus explained by M. de Choiseul:—Supposing the cavern itself to be one of those natural cavities which exist so abundantly in every part of the world, the water which issues through fissures in its rocky wall may be supposed to carry with it, in a state of solution, innumerable particles of calcareous matter: and when the water finally escapes, in the form of drops, at the roof and sides of the cavern, the calcareous matter held in solution remains, and forms a concretion, while the water evaporates. The nucleus thus formed is continually receiving an additional coating from fresh moisture, descending as before. Like icicles hanging from rocks washed by a torrent, the stalactites grow larger and larger, still preserving the conical figure occasioned by their original mode of formation. But should the water filtrate in greater abundance from above, the drops will not have time to evaporate in their passage; they will therefore fall to the bottom of the cavern, and will there form calcareous concretions, extending upwards, in proportion as those from the roof extend downwards; so that in process of time their extremities will meet. Thus will a column be formed, imperfect at first, but gradually enlarging from the same causes which originated it.

The stalactites with which this beautiful grotto is lined are formed of pure alabaster, a very delicate carbonate of lime; and a "tarry-at-home traveller" may form some faint idea of the brilliant appearance which a grotto thus furnished must present when lighted up by several torches.

THE BOTANIC GARDEN AND ARBORETUM AT KEW.

The closely-packed inhabitants of the metropolis are becoming every year more and more desirous of retaining a few breathing-spots, a few oases of grass and trees, amid the masses of brick and mortar in which they are involved. For half a century past the builders have had it all their own way: Kensington has come to London; London has stretched out to Hampstead, to Hackney, to Greenwich, to Clapham; and the "outskirts" of London are gone—we hardly know whither. It is not very likely that private owners of land will refrain from letting their ground for such purposes as will yield the best remuneration; indeed the very nature of commercial enterprise forbids us to look for such a result. Unless, therefore, the State interferes, the retention of open spots of ground would be almost impracticable. The earnestness with which the recent discussion respecting the Regent's Park, Primrose Hill, Victoria Park, &c. have been conducted, shows in how marked a degree the attention of the public has been directed to this matter, and augurs favourably for the future. Meanwhile, it may be as well just to remember what we do possess—if not actually in the metropolis—at least within the reach of those who can have a day's pleasure once now and then. The Botanic Garden and Arboretum at Kew are not so well known as they ought to be: and as they are national property, we will draw the reader's attention to them, in this season of flowers and bright sunshine.

It may be desirable to offer a few words of explanation respecting the meaning and object of a botanic garden, before we describe the arrangement of the one above alluded to. Gardens, in the common acceptation of the term, may mean any pieces of ground cultivated with fruit, flowers, and culinary vegetables; but they may be classified as botanic, commercial, public, and private gardens, according to the circumstances under which, or the objects for which, they are supported. Mr. Loudon characterizes a botanic garden as a place the primary objects of which are to exhibit a collection of plants for the improvement of botanical science; to exhibit living specimens of such plants as are useful in medicine, agriculture, and other arts, and to aid in the acclimatizing and dissemination of foreign plants throughout the country. Commercial gardens are those which are established by private individuals as a matter of trade: and assume the various forms of florists' gardens, devoted to the growth of flowers; market-gardens, for supplying the public markets with fruit and vegetables; nursery gardens or grounds, and herb-gardens. Public gardens may be deemed such as the plantation in St. James's Park, and in many of the squares of London, open either to the public generally, or to the inhabitants of a particular district; these are, in general, pleasure-grounds, intersected by gravel walks and studded with trees, rather than gardens commonly so termed. Private gardens include, of course, all those belonging to private individuals, and present features in accordance with the taste of the proprietor.

There are botanic gardens distributed throughout most of the countries in Europe, sometimes belonging to the sovereign or the state, and thrown open to the public; in other instances attached to scientific bodies. France, the various states of Germany, and Russia have many large gardens of this kind. With respect to our own country, the number is rather limited, owing in some degree to the caution with which parliament has bestowed the public funds upon matters of this kind. It has been remarked that gardening has not lost much in England by the duty of fostering it being thrown on private individuals; for if, on the

one hand, public gardens are few in number, no part of the Continent, on the other hand, possesses such multitudes of good private gardens as Great Britain. There are botanic gardens at Edinburgh, Glasgow, Liverpool, Oxford, Cambridge, Hull, Colchester, Manchester, and Birmingham, mostly established, within a comparatively recent period, by liberal bodies anxious for the promotion of botanical science. In the neighbourhood of London, the Botanical Society, the Horticultural Society, and the Apothecaries' Company have gardens established more or less for these purposes, to which may be added the Garden and Arboretum of Kew.

Kew House came into the occupation (by lease, and ultimately by purchase) of the Prince of Wales, father of King George III., rather more than a century ago, and the prince and princess brought the grounds belonging to the house into a state of great beauty. About the time when her son came to the throne, the princess set apart a portion of the pleasure-grounds for the reception of exotic plants; and this was the nucleus of the present botanic garden. The garden was placed under the care of the elder Aiton, who retained the situation until his death, in 1793, when it passed to his son. Sir Joseph Banks gave to this garden the immense collection of plants and seeds obtained in his voyages, and this example has been followed by many other travellers; so that the richness of its contents has been continually increasing. It is said to be better supplied with rare plants from New Holland than any other garden in the world. The arboretum is a portion of the grounds devoted to the reception of trees and shrubs.

Such, then, being the nature and objects of botanic gardens, we may proceed to state that the one in question is situated near the village of Kew, on the southern bank of the Thames. The small steamers, which form such a convenient mode of transit to Vauxhall and Chelsea, do not ascend so far as Kew, but there are steam-boats to Richmond, and vehicles along the Great Western Road to Kew Bridge, to aid those who are unequal to a walk of six or seven miles from Piccadilly to Kew. We will suppose ourselves to have reached Kew Bridge, and to have passed onward to the pleasant Green, situated near its southern extremity. A road-way, leading to Richmond, crosses to the middle of the Green, passing near a pretty country-looking church; and on the west, or right-hand side of the Green we see glimpses of the Garden. A row of houses skirts the Green on the side towards the river, and at the end of this row are a lodge and gates belonging to that part of the royal domain retained by the King of Hanover. Passing round to the left from this lodge, by a curved road, we soon come to an open railing, which affords a view of the arboretum within, and behind which are four urns raised on pedestals; an elegant conservatory is also visible in the midst of the grounds. We pass this railing, and shortly arrive at a gate, on which is written "Botanic Garden," where admission is gained. On the gate is a notice, which informs us that the Botanic Garden is open every day (except Sundays) from one to six o'clock; and a porter is at hand to admit the visitor. It may here be remarked, that the pleasure-grounds belonging to Kew Palace, and not included in the Botanic Garden and Arboretum, are under the superintendence of other parties, and are governed by different arrangements; admission to them is only obtained on two days in the week, and that only from Midsummer to Michaelmas.

[To be continued.]

The Forests of Canada.—No one who has a single atom of imagination can travel through these forest roads of Canada without being strongly impressed and excited. The seemingly interminable line of trees before you; the boundless wilderness around; the mysterious depths amid the multitudinous foliage, where foot of man hath never penetrated,—and which partial gleams of the noontide sun, now seen, now lost, lit up with a changeful, magical beauty—the wondrous splendour and novelty of the flowers,—the silence, unbroken but by the low cry of a bird, or hum of insect, or the splash and croak of some huge bull-frog,—the solitude in which we proceeded mile after mile, no human being, no human dwelling within sight,—are all either exciting to the fancy, or oppressive to the spirits, according to the mood one may be in. Their effect on myself I can hardly describe in words.

* * * * * *

I observed some birds of a species new to me; there was the lovely blue-bird, with its brilliant violet plumage; and a most gorgeous species of woodpecker, with a black head, white breast, and back and wings of the brightest scarlet; hence it is called by some the field-officer, and more generally the cock of the woods. I should have called it the coxcomb of the woods, for it came flitting across our road, clinging to the trees before us, and remaining pertinaciously in sight, as if conscious of its own splendid array, and pleased to be admired. There was also the Canadian robin, a bird as large as a thrush, but in plumage and shape resembling the sweet bird at home "that wears the scarlet stomacher." There were great numbers of small birds of a bright yellow, like canaries, and I believe of the same genus. Sometimes, when I looked up from the depth of foliage to the blue firmament above, I saw an eagle sailing through the air on apparently motionless wings. Nor let me forget the splendour of the flowers which carpeted the woods on either side. I might have exclaimed with Eichendorff,

"O Welt! Du schöne welt, Du!
Mann sieht Dich vor Blümen kaum!"

for thus in some places did a rich embroidered pall of flowers literally *hide* the earth. There those beautiful plants, which we cultivate with such care in our gardens, azalias, rhododendrons, all the gorgeous family of the lobelia, were flourishing in wild luxuriance. Festoons of creeping and parasitical plants hung from branch to branch. The purple and scarlet iris, blue larkspur, and the elegant Canadian columbine with its bright pink flowers; the scarlet lichnis, a species of orchis of the most dazzling geranium colour, and the white and yellow and purple cypripedium,* bordered the path, and a thousand others of most resplendent hues, for which I knew no names. I could not pass them with forbearance, and my Yankee driver, alighting, gathered for me a superb bouquet from the swampy margin of the forest. I contrived to fasten my flowers in a wreath along the front of the wagon, that I might enjoy at leisure their novelty and beauty. How lavish, how carelessly profuse, is Nature in her handiwork! In the interior of the cypripedium, which I tore open, there was variety of configuration, and colour, and gem-like richness of ornament, enough to fashion twenty different flowers; and for the little fly, in jewelled cuirass, which I found couched within its recesses, what a palace! that of Aladdin could not have been more splendid!—*Mrs. Jameson's Winter Studies and Summer Rambles in Canada.*

Superstition in Asia Minor.—Without the church at Merek was a rock with a smooth surface, which was supposed to possess the miraculous power of maintaining pieces of rock perpetually in contact, provided the person placing them there was free from sin. Here were seen numerous persons sufficiently credulous to make the vain attempt. After holding their fragments, and trying repeatedly whether they had stuck, by removing or slackening the pressure of the hand, they were mortified to find that their hopes and endeavours were fruitless—a discovery which one would have thought their consciences might previously have led them to make. Some of the more crafty sought out slight inequalities in the rock, hoping by this device to gain a temporary triumph. What blind ignorance in the people do such attempts betray, and what debasement in the clergy who countenance them! It is quite indispensable to the success of missionary labours in these countries to enlighten the Christians, for unless that be accomplished, any progress among the Mohammedans were utterly hopeless.—*Mr. Consul Brant's Journey from Erz-rum to Van: Journal of Royal Geographical Society.*

* From its resemblance in form to a shoe, this splendid flower bears everywhere the same name. The English call it lady's-slipper; the Indians know it as the mocassin-flower.



[Boors Merry-making.—Ostade.]

GRATUITOUS EXHIBITIONS OF PICTURES.

DULWICH COLLEGE.

In estimating the value of painting as a medium of civilization, critics are but too apt to consider that the representation of vulgar life is rather a drawback than an advantage. Hence the works of Adrian van Ostade, and those of his still more celebrated contemporary, born in the same year, David Teniers the younger, are more frequently referred to as specimens of merely successful imitations of coarse nature, than as examples of art whence may be drawn wholesome food for instruction and valuable matter for contemplation. In such limited views we can by no means concur, for we conceive that humanity, under every aspect in which it may be viewed, affords a subject at once available to the skill of the painter and the reflection of the moralist. Here, however, we must guard ourselves from being misunderstood, by adding, that such is the case, provided the scene adopted does not present an outrage upon decency, a qualification essentially necessary when speaking of painters of familiar subjects in the Flemish and Dutch schools.

If by the sublime productions of the Roman artists we are elevated in our sentiments, or are soothed by the pure and graceful simplicity of Correggio, we must not therefore conclude that the mind may not be convinced or the heart amended by the delineations of every-day life. The kind offices of humanity, the loveliness of domestic affection, the hilarity of rational amusement, and even the uproariousness of obstreperous enjoyment, alike afford, to those who think, a source of reflection as well as of visual gratification. Indeed in some instances the familiarity of a subject may be the very means by which we may be enabled to come to a right conclusion upon its real value. The battles of Alexander or the triumphs of Cæsar may arouse our conventional notions of glory, but the squabble of the alehouse or the ruffian contest of the skittle-ground brings us at once to a just appreciation of the brutalizing effects of physical violence. In the same manner the tranquillizing feelings which to the cultivated spectator are produced by viewing the productions of Guido or of Carlo Dolci, are more immediately appealed to in the uninitiated in the principles of high art, by the representation of familiar scenes, so long as they are confined to peaceable enjoyment or innocent merriment.

Of such a class is the picture from which Mr. Jackson has engraved the illustration above. Three Dutch countrymen, or boors, are seated round a low table, one of them playing, or having just finished a tune upon the fiddle, whilst his companions evidence their admiration of his skill, one by suspending his enjoyment of the tobacco-pipe, the other by pledging the musician in a cup of beer or of Scheidam. Here we may suppose them to be gathered for social enjoyment after the labours of the day; and he must be ascetic indeed who can look on unmoved by the simple gratification of his poorer fellow-men. In this picture the expression, upon a careful examination, will be found admirable; there is a lively speakingness in the man pledging with the cup, which excellently contrasts with the solid complacency of the smoker, and at the same time appears to have elicited from the player a correspondent grin of ineffable and boundless self-satisfaction. In short the boor with the conical cap enacts the part of Orpheus, suspending the puff of his next neighbour, as his prototype did the whirling of Ixion's wheel, though it must be admitted that the attitude of the third man little accords with the tranquillity fabled to have been caused in the stone of Sisyphus, since the can, which may stand in lieu of that implement, seems to be in active operation.

Next to the expression contained in this picture, we may admire the admirable management of the lights and darks, and the extreme fidelity of the perspective. Though dark in its general tone, the work is still transparent; and whilst its scale is far below the glare of daylight, yet the tints are so lucid and clear that the glow of the setting sun may be readily imagined. The style of its execution is careful, yet exempt from over-finish and needless elaboration; nor is there any want of freedom of handling in those parts where a bolder mode of using the pencil gives reality to the texture of the various stuffs introduced.

The eminent painter of this picture, Adrian van Ostade, was born at Lubeck, in the year 1610, and removed to Haerlem, whilst very young, for the purpose of studying under Francis Hals, better known by the designation of Frank Hals, a painter whose works were then in great repute. He had for his fellow-pupil Adrian Brouwer, with whom he formed a strict intimacy, and whom he induced to leave the house of Hals. On quitting the study of his master, Ostade painted for many years at Haerlem, but taking alarm at the approach of the French troops in 1662, he quitted that city and removed to Amsterdam, with a view of returning to Lubeck, but was persuaded to continue there. He was greatly prized and his works extensively purchased at good prices, which induced him to remain at Amsterdam till the period of his death, which happened in the year 1685.

The pictures of this master are generally of the class of that which we have already noticed, or the interiors of beer-houses or kitchens with boors regaling, and sometimes indulging in drunken quarrels and frolics. The lowness of these subjects might be supposed to render Ostade's works offensive; and in many instances, in consequence of the introduction of unnecessary grossness, they are extremely so; yet the masterly style in which they are painted, the immense command the artist had over the delineation of character and expression, his profound knowledge and admirable management of the chiaro-'scuro, his rich and glowing tints and harmonious blending of colour, render them so fascinating to the eye, that the judgment is suspended and the rigour of criticism is disarmed. "The subjects which he chose to paint," says Mr. Pilkington, "were always of the low kind, and he had almost the same ideas with Teniers; but though Ostade copied nature as it appeared in the lower class of mankind, among whom he seemed to be most conversant; though his choice was without elegance, imitating uncomely nature without endeavouring to improve it; accommodating the actions, habits, and characters of his figures to his own taste; yet there is such spirit in his compositions, such truth, such nature, such life, and such delicacy of pencil, that even while many of his objects are rather disgusting, a spectator cannot forbear to admire his genius and his execution."

A writer in Rees's 'Cyclopædia' has also remarked, with no less justice than power of expression, in speaking of the paintings of Ostade, that "he surprises our judgment into implicit admiration by a truth of character and energy of effect which preclude the foundation of censure."

Although this painter exercised his art for a great number of years, his careful mode of execution did not allow him to produce so many as those artists, Teniers for instance, who adopted a different principle. In the pictures of Ostade, the whole surface will be found to be painted on, so as to exclude from sight the colour of the panel upon which it is executed; whilst in those of Teniers the ground upon which the artist worked will be seen through the transparent colour he used, the principal lights and darks alone shutting it out from view. It will readily be understood how much more rapidly the latter mode would bring a picture to completion than the former; but it is worth while to notice how exactly the two artists have arrived at the same end, that is, an exact imitation of nature, by such different means. Though the light in Teniers' pictures is usually more broad and expansive than in those of Ostade, there is precisely as great a degree of lucid truth in one as in the other; and if on some occasions Ostade is more forcible in his effects than Teniers, Teniers is never less true to nature than Ostade.

BOTANIC GARDEN AND ARBORETUM AT KEW.

[Concluded from page 264.]

On entering the gate, we pass along a winding path, which terminates in a beautiful grassy spot covered with trees, forming part of the Arboretum. A gate leads out of the curved path, on the left, but this leads to private buildings. On reaching the grassy plot, paths branch out both to the right and left, the latter of which leads to the Botanic Garden. This left-hand path brings us to a spot where a doorway, bordered with roses in full bloom, separates the Arboretum from the Botanic Garden. Within this doorway we find ourselves in the midst of the various buildings belonging to the Garden; these we will go round in a direction from left to right. The doors of all the hothouses and greenhouses are left unfastened, and no obstructions whatever are placed in the way of visitors who know how to respect the objects which they are permitted to visit.

The first hothouse on the left is a building about fifty feet long by twelve wide, stocked with valuable plants which require a high temperature for their preservation. There may perhaps be some of our readers who are not familiar with the various modes in which hothouses are kept at the desired temperature. The most general mode is by fires and smoke flues; the fire being made in a small brick fire-place, unconnected with the interior of the hothouses, and the heated air and smoke being made to traverse the length of the hothouse in brick flues fifteen or eighteen inches high by eight or ten in width. Sometimes the flue traverses the length of the hothouse on one side, and returns on the other; but where the hothouse is narrow, the return flue is close to the other one. In the hothouse to which allusion has just been made

there is a fire-place at each end, from which a flue proceeds along to the middle of the length of the house, a little above the floor, and returns under the footway, through which there are holes to admit heated air from the vicinity of the flue. In many botanic gardens and large nurseries the heating is effected by steam, which is generated in boilers placed in some convenient part of the garden, and conveyed through the hothouses in steam-pipes: the botanic hothouses in the Duke of Northumberland's garden at Sion-house, and at Messrs. Loddiges at Hackney, are heated in this way. A third mode of heating is by hot water circulating through iron pipes, and giving off abundance of heat in its progress. Of these three modes of heating, the old mode of smoke-flues is the only one adopted in Kew Gardens, except in a conservatory of which we shall presently speak.

When we have passed from end to end through this first hothouse (we may here remark that visitors should be careful not to leave the doors of the hothouses open), we arrive at a small open spot in which a *rosa Banksia* is trained against the wall, and beyond this a second hothouse, about the same dimensions as the first. At each end of the bed in this hothouse is an oval tank containing water, for the reception of such plants as require that mode of treatment. In front of these two hothouses is an open space, occupied partly with inclined frames, and partly with rock-work beds, that is, beds having small masses of stone distributed over them in different parts to imitate rock, among which mosses, ferns, &c. may grow.

As we pass along by the left wall of the garden, we come to separate portions of the ground laid out in various ways. Beyond the rock-work beds just alluded to is a greenhouse about sixty feet in length; then another rock-work bed; then an enclosure presenting a very pretty appearance. This latter is an oblong parallelogram, with a thick and well-trimmed wall of ivy on all sides, and the ground is laid out partly in narrow beds and partly occupied by frames, containing various small plants. Next ensues another open spot, containing, among other objects, three trees of a remarkable kind: one is the *araucaria imbricata*, an Australian tree, of such a delicate kind that a house is built round and over it during the winter to preserve it from cold; another is the *betula pendula*, a tree whose branches droop down to the ground at a distance of ten or fifteen feet from the trunk, forming an umbrageous cupola or dome; the third is a tree called the *Broussonetia papyrifera*, of which it is almost impossible to find two leaves shaped alike. Next to this is a circular plantation, about a hundred feet in diameter, bounded, except at two entrances, by a thickly planted hedge, and occupied by six concentric beds, with paths between them, and cutting them at right angles, the whole encompassing a circular bed in the centre: this arrangement has an exceedingly pretty effect to the eye. At a little distance beyond this circular plantation we come to the extremity of the left wall, passing two wickets which lead to another garden on the left, apparently not open to the public.

From the corner to which we have just arrived, a wall, bordered by a path, leads in a curved direction round nearly to the spot at which we entered the garden; and the principal part of the ground so encircled is laid out in open beds, separated here and there by paths, and stocked with a large variety of choice plants. In this part of the ground is a greenhouse about a hundred feet in length; and near it are tan-pits or beds, that is, enclosed frames containing tan or bark for various kinds of plants. Behind this large greenhouse is another open space, occupied in part by a rock-work bed with ferns, mosses, &c., and in other parts by plants of different character. Then arriving nearly at the spot where we entered the garden, we come to three hothouses connected together in one row; and at the end of these, a water-bed or tank for the reception of pots containing aquatic plants.

From this place we enter by one of several openings into the Arboretum, which is an extensive piece of ground covered with grass, and studded more or less thickly with trees and shrubs, of most of which the names are given, on small tablets attached to the lower part of the tree. Immediately on entering, a small circular temple or pavilion meets the eye: it was built by George IV. as a refreshment-room, and consists of a circular room, round the upper part of which are painted the signs of the zodiac: it is lighted by eight windows, and has an ornamental projecting cornice supported by eight Corinthian pillars, whose bases rest on a raised terrace. Passing round by the left, we arrive in a few minutes at the orangery, a building erected about ninety years ago for the reception of orange and other tropical trees. It is warmed during the winter by flues running in various directions beneath the pavement. The noblest plant in this room, among many of large size, is the *araucaria excelsa*, brought from Norfolk Island. Although standing nearly twenty feet in height, it is planted in a tub, and in that condition moved out into the open air as soon as the summer weather becomes sufficiently warm and settled: on a recent visit, we found this tree just about to be removed from the orangery into the open green in front of it,—an operation of much labour.

The very extensive grounds stretching beyond the orangery in this direction comprise the *pleasure-grounds* belonging to the palace, which are not so frequently open to the public as the garden and Arboretum, and which it is not our object to allude to here. Returning, therefore, from the orangery, and proceeding through a thickly wooded and beautiful part of the Arboretum towards the river, we speedily come to the new conservatory, the most elegant of all the buildings. This is a large and very lofty conservatory, built by his late majesty William IV., principally for the reception of rare and valuable plants from New Holland. On each side of the conservatory, near the floor, is a mass of iron pipes, some miles in length, for warming the conservatory, when necessary, on Mr. Perkins's hot-water principle. This conservatory, being an isolated building, and having four fronts, presents a very elegant appearance. This is the building which is visible from Kew Green through the open railings; and from this spot we may either ramble through the grounds to the wall which separates them from the river, or may return to the entrance from whence we started; in either case passing among and between and under trees of very varied kinds.

It has formed no part of our plan to enumerate the botanical treasures of the garden, but to indicate what may be termed its topography and general arrangement. Almost every specimen has a label or ticket attached, on which the name is written. It is true that these inscriptions generally give the Latin or scientific name of the plant; but in by far the greater number of instances there is no popular English name belonging to it; and if there were, it is necessary in a garden established principally for the furtherance of scientific botany, to give the names by which plants are known to botanists generally, whether of this or of other countries.

Ingenuity wasted.—It is no merit to accomplish an object by difficult instruments when easy ones are at hand, or to reach an end by a circuitous road when there is a straight course. Michael Angelo being told of an artist who painted with his fingers, exclaimed, "Why does not the blockhead make use of his pencils?"



[Bewick's Workshop, Newcastle.

LIFE OF BEWICK.

[Concluded from p. 261.]

On Bewick's return to Newcastle, in 1777, he entered into partnership with Mr. Beilby; and his younger brother, John Bewick, who was then about seventeen years old, became their apprentice. From this time Bewick, though he continued to assist his partner in the other branches of their business, applied himself chiefly to engraving on wood. The cuts in an edition of Gay's 'Fables,' 1779, and in an edition of 'Select Fables,' 1784, both printed by J. Saint, Newcastle, were engraved by Bewick, who was probably assisted by his brother. Several of these cuts are well engraved, though by no means to be compared to his later works, executed when he had acquired greater knowledge of the art, and more confidence in his own powers. He evidently improved as his talents were exercised; for the cuts in the 'Select Fables,' 1784, are generally much superior to those in Gay's 'Fables,' 1779; the animals are better drawn and engraved, the sketches of landscape in the backgrounds are more natural; and the engraving of the foliage of the trees and bushes is not unfrequently scarce inferior to that of his later productions. Such an attention to nature in this respect is not to be found in any woodcuts of an earlier date. In the best cuts of the time of Durer and Holbein the foliage is generally neglected; the artists of that period merely give general forms of trees, without ever attending to that which contributes so much to their beauty. The merit of introducing this great improvement in wood-engraving, and of depicting quadrupeds and birds in their natural forms and with their characteristic expression, is undoubtedly due to Bewick. We may here observe that for several of the cuts in the 'Select Fables' Bewick was only paid nine shillings each! Towards the latter end of 1785 Bewick began to engrave the cuts for his 'General History of Quadrupeds,' which was first printed in 1790. His own account of the origin of this work is interesting:—"From my first reading, when a boy at school, a sixpenny 'History of Birds and Beasts,' and a then wretched composition called the 'History of Three Hundred Animals,' to the time I became acquainted with works on natural history written for the perusal of men, I never was without the design of attempting something of this kind myself; but my principal object was (and still is) directed to the mental pleasure and improvement of youth; to engage their attention, to direct steps aright, and to lead them on till they became enamoured of this innocent and delightful pursuit. Some time after my partnership with Mr. Beilby commenced, I communicated my wishes to him, who, after many conversations, came into my plan of publishing a 'History of Quadrupeds,' and I then immediately began to draw the animals, to design the vignettes, and to cut them on wood; and this, to avoid interruption, frequently till very late in the night; my partner at the same time undertaking to compile and draw up the descriptions and history at his leisure hours and evenings at home. With the accounts of the foreign animals I did not much interfere; the sources whence I had drawn the little knowledge I possessed were open to my coadjutor, and he used them; but to those of the animals of our own country, as my partner before this time had paid little attention to natural history, I lent a helping hand. This help was given in daily conversations, and in occasional notes and memoranda, which were used in their proper places." The comparative excellence of the cuts in this work, which, for the correct delineation of the animals and the natural character of the incidents, and the backgrounds, are superior to anything of the kind that had previously appeared, insured a rapid sale for the work; a second edition was published in 1791, and a third in 1792. The tail-pieces in this work generally display great humour and talent. In the following cut of a sour-visaged old fellow going with corn to the mill, we have an exemplification of cruelty not unworthy of Hogarth. The over-laden, half-starved, old horse, broken-kneed, greasy-heeled, and evidently troubled with the string-halt, as is indicated by the action of the off hind leg, hesitates to descend the brae, at the foot of which there is a stream, and the old brute on his back urges him forward by working him, as jockeys

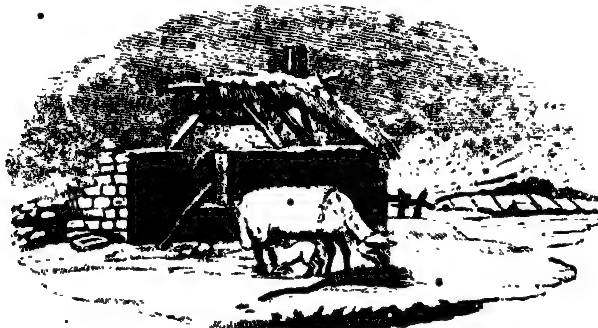
say, with the halter, and beating him with his stick. In the distance, Bewick, as is usual with him when he gives a sketch of cruelty or knavery, has introduced a gallows. The miserable appearance of the poor animal is not a little increased by the nakedness of his hind-quarters; his stump of a tail is so short that it will not even serve as a *catch* for the crupper or *tail-band.*



[Man and Horse.]

Though the subject of the following cut is simple, yet the *sentiment* which it displays is the genuine offspring of true genius. Near to a ruined cottage, while all around is covered with snow, a lean and hungry ewe is seen nibbling at an old broom, while her young and weakly lamb is sucking her milkless teats. Such a picture of animal want, conceived with so much feeling and so well expressed, has perhaps never been represented by any artist except Bewick.

The favourable manner in which, the 'History of



[Ruined Cottage and Sheep.]

Quadrupeds' was received, determined Bewick to commence without delay his 'History of British Birds.' He began to draw and engrave the cuts in 1791, and in 1797 the first volume of the work, containing the land birds, was published. The letter-press, as in the Quadrupeds, was written by his partner, Mr. Beilby, who certainly deserves great praise for the manner in which he has performed his task. The descriptions generally have the great merit of being simple, intelligible, and correct.

The partnership between Beilby and Bewick having been dissolved in 1797, shortly after the publication of the first volume of the Birds, the descriptions in the second, which did not appear till 1804, were written by Bewick himself, but revised by the Rev. Henry Cotes, vicar of Bedlington. The publication of this volume formed the key-stone of Bewick's fame as a designer and engraver on wood; for though the cuts are not superior to those of the first, they are not excelled, nor indeed equalled, by any that he afterwards executed. Indeed nothing of the same kind that wood-engraving has produced since the time of Bewick can for a moment bear a comparison with them. They are not to be equalled till a designer and engraver shall arise possessed of Bewick's knowledge of nature, and endowed with his happy talent of expressing it. Bewick has in this respect effected more by himself than has been produced by one of our best wood-engravers when working from drawings made by a professional designer, but who knows nothing of birds, of their habits, or the places which they frequent, and has not the slightest feeling for natural incident or picturesque beauty. The cut of the woodcock, of which the following is a copy, is another instance of the able manner in which Bewick has availed himself of the capabilities of his art. He has here produced the most perfect likeness of the bird that ever was engraved, and at the same time given to his subject an effect, by skilful management of light and shade, which it is impossible to obtain by means of copper-plate engraving. Bewick thoroughly understood the advantages of his art in this respect, and no wood-engraver or designer, either ancient or modern, has employed them with greater success, without sacrificing nature to mere effect.

As an engraver, Bewick's life affords a lesson to all who wish to attain distinction in art, and at the same time to preserve their independence. He diligently cultivated his talents, and never trusted to booksellers or designers for employment. He did not work according to the directions of others, but struck out a path for himself; and by diligently pursuing it according to the bent of his own feelings, he acquired both a competence with respect to worldly means and an ample reward of fame. The success of his works did not render him inattentive to business; and he was never tempted by the prospect of increasing wealth to indulge in expensive pleasures or live in a manner



[Woodcock.]

which his circumstances did not warrant. What he had honestly earned, he frugally husbanded; and, like a prudent man, made a provision for his old age. "The hand of the diligent," says Solomon, "maketh rich." This Bewick felt, and his life may be cited in exemplification of the truth of the proverb. He acquired not indeed great wealth, but he attained a competence, and was grateful and contented. No favoured worshipper of Mammon, though possessed of millions obtained by "watching the turn of the market," could say more. In the summer of 1828, Bewick visited London; but he was then evidently in a declining state of health, and he had lost much of his former energy of mind. Scarcely anything that he saw interested him, and he longed no less than in his younger days to return to the banks of the Tyne. He had ceased to feel an interest in objects which formerly afforded him great pleasure: for when his old friend, the late Mr. William Bulmer, drove him to the Regent's Park, he declined to alight for the purpose of visiting the collection of animals in the gardens of the Zoological Society. On his return to Newcastle he appeared for a short time to enjoy his usual health and spirits. On the Saturday preceding his death he took the block of the Old Horse waiting for Death to the printers, and had it proved; on the following Monday he became unwell, and after a few days' illness he ceased to exist. He died at his house on the Windmill Hills, Gateshead, on the 8th of November, 1828, aged seventy-five. He was buried at Ovingham.

The following cut, in which is introduced an imaginary representation of Bewick's funeral, presents a correct view of the place. The popular saying, so well known in Northumberland,—

> "Happy is the bride that the sun shines on,
> And happy is the corpse that the rain rains on"—

meaning that sunshine at a wedding is a sign of happiness in the marriage state to the bride, and that rain at a funeral is a sign of future happiness to the person about to be interred—suggested the introduction of the rainbow.



[Bewick's Funeral.]

CHAUCER'S PORTRAIT GALLERY.

THE CLERK OF OXENFORD*.

"A clerk there was of Oxenford also,
That unto logic haddé long ygo†,
As leané was his horse as is a rake,
And he was not right fat, I undertake;
But looked hollow and thereto soberly.
Full threadbare was his overest courtessy‡:
For he had getten him yet no benefice,
He was nought worldly to have an office.
For him was lever have at his bed's head
A twenty bookés clothed in black or red
Of Aristotle and his philosophy,
Than robes rich, or fiddle or psaltry.
But all be that he was a philosópher,
Yet haddé he but little gold in coffer§,
But all that he might of his friendés hent ||
On bookés and on learning he it spent,
And busily gan for the soulés pray
Of them that gave him wherewith to scholay.
Of study took he mosté care and heed.
Not a word spake he moré than was need;
And that was said in form and reverence,
And short and quick, and full of high senténce;
Sounding in moral virtue was his speech;
And gladly would he learn and gladly teach."

This very interesting character has much in common with the "poure parson of a town" who last engaged our attention, although the poet, with true dramatic skill, has kept them perfectly distinct from each, not only as examples of the respective classes, to which they belong, but as real personages, having their respective individual characteristics. The same lofty feelings and principles actuate both, assuming in the one instance a deeply religious cast, and in the other an equally powerful moral and philosophical tone; both are learned men; both poor, and both willing to remain so, whilst the one can enjoy the society of his books, and the other advance the spiritual prosperity of his flock. Their differences are no less noticeable and instructive. The entire heart and mind of him, who, apart from the sacred writings, presents the most perfect specimen of a Christian pastor that we possess, or that the imagination of man can conceive, is occupied by the care of his flock; the clerk's morality and philosophy by no means produce an equal abnegation of self—

"Of *study* took *he* mosté care and heed:"

the first lives wholly for others; the second, inferior only to him, spends no inconsiderable portion of his time and energies on himself. Yet even in so doing, how utterly divested is he of any sentiment of a selfish kind! Though the "poure parson's" philosophy may be the nobler, yet still how noble is the clerk's! Aware of the high capacities God has implanted in him, he thinks it but his duty, as it is his pleasure, to develop them to the utmost, and at the same time both these influences impel him to impart to his fellow-men whatever of value his studies have bequeathed to him. "Gladly would he learn," says Chaucer, in the exquisite concluding line of the description, "and gladly teach."

There are two passages of a very extraordinary kind in relation to the parson and the clerk, by Warton, which show but too clearly how little this generally admirable historian of poetry could sympathise with the highest class of poetical creations. He says of Chaucer's description of the first, that he shows in it "his good sense and good heart;" and there ends his commendation; whilst of the second, in reference to these noble lines—

"Not a word spake he moré than was need;
And that was said in form and reverence,
And short and quick, and full of high senténce"—

he writes, "The clerk's unwearied attention to logic had tinctured his conversation with much pedantic formality, and taught him to speak on all subjects in a precise and sententious style." If this is not a fair specimen of what Swift calls the "art of sinking" in poetry, we do not know what is. How differently Godwin has read the lines may be inferred from the fact that he adduces them as one of the proofs of a very interesting theory, namely, that Chaucer, in the person of the Clerk, described his own mental characteristics. We need hardly say that Godwin, in applying these lines to the poet, did not intend to call him a formal pedant. The theory to which we have alluded is too interesting to be passed over without examination. Chaucer, as we have before stated, is himself one of the pilgrims who are journeying towards Canterbury. As he describes all his companions—their persons, habits, minds—he could scarcely avoid, without affectation, some allusions to himself. Most happily he got over the difficulty. After the Prioress has told her tale, the host looks about him to see who shall tell the next, when his eye falls on Chaucer, whom he thus addresses:—

"———— What man art thou? quod he;
Thou lookest as thou wouldest find a hare,
For ever upon the ground I see thee stare.
Approaché near, and look up merrily.
Now, ware you, sirs, and let this man have place.
He in the waist is shapen as well as I:
This were a poppet in an armé to embrace
For any woman small and fair of face.
He seemeth elvish by his countenance,
For unto no wight doth he dalliance."

The poet, however, has here described his personal features, only; but in the Clerk of Oxenford, we believe, and that belief is sanctioned by Godwin's high authority, he has revealed to us a most interesting glimpse of his literary habits, mind, and of a very important event in his history, of which we should otherwise have been ignorant. The love of "Aristotle and his philosophy" could not possibly apply more forcibly to the Clerk than we know it did to Chaucer; and of the latter's love of reading, and his propensity to enjoy that solace in bed in his sleepless hours, when the books at "his bed's head" must have been found very convenient, he has himself expressly and repeatedly informed us. But the most striking proof of the connection is that Chaucer, as we have just stated, has put in the Clerk's mouth a record of one of the most interesting events of his (the poet's) life. "I will tell you a tale," says the Clerk to his fellow-pilgrims,

"———— which that I
Learnéd at Padua of a worthy clerk,
* * * *
Francis Petrarch, the laureate poéte."

The tale referred to is the exquisitely pathetic story of 'Griselda,' which Petrarch translated from the 'Decameron' of Boccaccio. In 1373 Chaucer was sent on a mission to the Genoese, and in that very same year Petrarch, in a letter still preserved, told Boccaccio that the 'Decameron' had fallen into his hand for the first time only a few weeks before, and that the narrative with which it concluded (the tale in question) had particularly struck him. As a still further proof

* Oxford. † Gone. ‡ A short upper cloak.

§ This alludes, we presume, to the connection between alchemy and philosophy, which was formerly so close that the two were seldom found apart; and to the fact that the clerk found his alchemy put no more gold into his coffer than it had done into the coffers of his fellow-students in the art before or since.

|| Lay hold of; obtain.

that the Clerk states a true fact for the poet's biography, Godwin remarks, "Why did Chaucer choose to confess his obligation to Petrarch rather than to Boccaccio, from whose volume Petrarch confessedly translated it (and with which Chaucer was familiarly acquainted)? For this very natural reason—because he was eager to commemorate his interview with this venerable patriarch of Italian letters, and to record the pleasure he had reaped from his society. Chaucer could not do this more effectually than by mentioning his having heard from the lips of Petrarch a tale which had been previously drawn up and delivered to the public by another."* Chaucer's visit to Petrarch must have occurred about the period when the latter had finished his translation of the tale; and no doubt he learned it from the Italian poet's own lips: and, as his biographer observes, the magic of a tale, perhaps the most pathetic that human fancy ever conceived, heard under the sacred roof of him in whom the genius of modern poetry seemed to be concentrated, must have been altogether a surprise, a feast, a complication of sentiment and pleasure, such as it has fallen to the lot of few mortals to partake. We may conclude this part of our subject by relating an anecdote illustrative of the effect of this tale on one of its readers. About the same time that Petrarch read it to Chaucer, he showed it to one of his Italian friends, a citizen of Padua. The latter attempted to read it aloud, but he had no sooner got into the incidents of the story than he was obliged to desist; his voice was choked by his emotions. He repeated the trial, but was quite unable to proceed.

In the Sutherland Manuscript the Clerk's surcoat, or "overest courtessy," with the hood, is of a dirty violet colour; his stockings, and the saddle and bridle on his "lean" miserable-looking horse, are of scarlet. He holds a book in his right hand, which is stretched out, as if he were descanting upon its contents. Under his left arm he carries other books bound in red and blue. The painter has not overlooked the "hollow" face of the poor but high-minded Clerk.

The Post-Office in Canada.—The poor emigrants who have not been long from the old country, round whose hearts tender remembrances of parents, and home, and home friends yet cling in all the strength of fresh regret and unsubdued longing, sometimes present themselves at the post-offices, and on finding that their letters cost three shillings and fourpence, or perhaps five or six shillings, turn away in despair. I have seen such letters not here only, but often and in greater numbers at the larger post-offices. At Brandtford I saw forty-eight such letters, and an advertisement from the post-master, setting forth that these letters, if not claimed and paid for by such a time, would be sent to the dead-letter office. I have thought with pain how many fond, longing hearts must have bled over them. The torture of Tantalus was surely nothing to this.—*Mrs. Jameson's Winter Studies and Summer Rambles in Canada.*

Simplicity of Agricultural Operations in the Weed Prairies of Texas.—In their "weed prairies" the counties of Robertson and Milam possess a characteristic of the soil peculiar to themselves. These prairies, unlike most of those in other localities, are covered with a thick growth of weeds instead of grass. These weeds are generally from ten to fifteen feet high, and so dense that they are almost impenetrable to man or horse, resembling, in some respects, the cane-brakes of the alluvial region. The settlers highly estimate the productive power of the weed prairies. The soil is chiefly of a light mulatto colour, and remarkably fertile. In order to prepare it for cultivation, it is only necessary to beat down and burn the weeds, after which the soil is in a condition to receive the seed, being almost all loose and friable as a bed of ashes. In planting these prairies, the plough is seldom used, but, instead of it, the settlers apply a large spiked roller, usually formed of a log, with harrow teeth placed at intervals, so as to form holes when dragged over the ground. Into these holes the Indian corn is dropped, and then covered slightly with earth, which is generally "kicked" over it. The seed thus rudely and carelessly planted soon throws up vigorous blades, which require no further attention until harvest, except light hoeing.—*Kennedy's Texas.*

Hyde Park a Century since.—One circumstance that tends to impress us with the idea of the solitary character of Hyde Park and its environs, when compared with St. James's Park, during the reigns of the last Stuarts and the first sovereigns of the present dynasty, is its being frequently selected, in common with the then lonely fields behind Montague House, now the British Museum, as the scene of the more inveterate class of duels. In the days when men wore swords there were many off-hand duels—*impromptu* exertions of that species of lively humour. Horace Walpole, sen., quarrelled with a gentleman in the House of Commons, and they fought at the stair-foot. Lord Byron and Mr. Chaworth stepped out of a dining-parlour in the Star and Garter Tavern, Pall-Mall, and fought, by the light of a bed-room candle, in an adjoining apartment. More than one duel occurred in Pall-Mall itself. But there were also more ceremonious duels, to which men were formally invited some time beforehand, and in which more guests than two participated. The pistol-duel in which Wilkes was severely wounded occurred in Hyde Park. Here too the fatal duel in which the Duke of Hamilton and Lord Mahon (November, 1712) fell, and their seconds were wounded, took place. Swift enables us to fix with precision the locality of this last event: he says, in his 'Journal to Stella,' "The Duke was helped towards the Cake-house by the Ring in Hyde Park, where they fought, and died on the grass before he could reach the house." Its loneliness is also vouched for by the frequency of highway robberies in its immediate vicinity: pocket-picking is the branch of industry characteristic of town places like St. James's Park; highway-robbery and fox-hunting are rural occupations. The narrative of the principal witness in the trial of William Belchier, sentenced to death for highway-robbery in 1752, shows the state in which the roads which bound Hyde Park were at that time, and also presents us with a picture of the substitutes then used instead of a good police:—William Norton: The chaise to the Devizes having been robbed two or three times, as I was informed, I was desired to go in it, to see if I could take the thief, which I did on the 3rd of June, about half an hour after one in the morning. I got into the post-chaise; the post-boy told me the place where he had been stopped was near the Half-way House between Knightsbridge and Kensington. As we came near the house, the prisoner came to us on foot, and said, "Driver, stop!" He held a pistol tinder-box to the chaise, and said, "Your money directly: you must not stay, this minute your money." I said, "Don't frighten us; I have but a trifle; you shall have it." Then I said to the gentlemen (there were three in the chaise), "Give your money." I took out a pistol from my coat-pocket, and from my breeches-pocket a five-shilling piece and a dollar. I held the pistol concealed in one hand and the money in the other. I held the money pretty hard; he said, "Put it in my hat." I let him take the five-shilling piece out of my hand; as soon as he had taken it I snapped my pistol at him; it did not go off: he staggered back, and held up his hands and said, "Oh Lord! oh Lord!" I jumped out of the chaise: he ran away, and I after him about six or seven hundred yards, and there took him. I hit him a blow on his back; he begged for mercy on his knees; I took his neckcloth off and tied his hands with it, and brought him back to the chaise: then I told the gentlemen in the chaise that was the errand I came upon, and wished them a good journey, and brought the prisoner to London. Question by the prisoner: "Ask him how he lives." Norton: "I keep a shop in Wych Street, and sometimes I take a thief." The post-boy stated on the trial that he had told Norton, if they did not meet the highwayman between Knightsbridge and Kensington, they should not meet him at all—a proof of the frequency of these occurrences in that neighbourhood. Truly while such tricks were played in the park by noblemen and gentlemen in the daytime, and by footpads at night, the propinquity of the place of execution at Tyburn to the place of gaiety in the Ring was quite as desirable as it seems upon first thought anomalous.—*London*, No. XII.

* 'Life of Chaucer,' vol. ii., p. 149.



[Long or Middle-Horned Cattle.—*a*, Old Craven Bull; *b*, Shropshire Ox; *c*, New Leicester Bull; *d*, Devon Bull; *e*, Devon Cow; *f*, Hereford Bull; *g*, Hereford Cow; *h*, Sussex Cow.]

CATTLE.

One of the most important, if, indeed, not the most important of man's conquests over the animal kingdom, is the ox. Its subjugation appears to have been one of his earliest triumphs: we read in the Mosaic record that Jabal was the father "of such as have cattle;" and thus are we introduced to the ox at a primitive period of man's existence on the globe. Beyond the fact, however, that this most valuable animal was then domesticated, we have no information; and it is useless to fill up the vacuum with vague and unsatisfactory surmises. As the circumstances attendant upon the primæval domestication of the ox are beyond our knowledge, so is our information as limited with regard to the original source whence it sprung: we know not whether the various races of domestic cattle which are peculiar to different climates are attributable to the same primitive stock or the contrary; nor among the various wild oxen now extant are we acquainted with one to which we can refer as the type of any one of the domestic races.

It is true that a race of wild cattle existed in Central Europe within the range of authentic history, to which the ancients gave the name of *Urus*, and which, contrary to the opinion of Cuvier, Dr. Weissenborn asserts to be identical with the European bison* or bonassus

* The bison of America has no real claim to this ancient title.

of the ancient writers, and of which he regards the aurochs or zubr of Lithuania as the descendant. If so, the urus of Cæsar is not the origin of the common ox of our part of the world.

Cuvier, however, conceives it probable that the urus of Cæsar is distinct from the bison of Pliny, which latter is certainly the aurochs (and still called bisent or wisent in some of the districts of Germany); and he is further of opinion that to this ancient urus belonged the fossil remains of a species of ox with a large head and horns, found in the superficial strata both of England and the Continent. Hence he infers that the urus is extinct, and that we are, perhaps, justified in regarding these relics in question as the remains of the primitive type of the domestic ox, namely, the *Urus antiquorum*.

Many naturalists, and among them Mr. Bell, lean to Cuvier's opinion, and certainly with much in their favour. "Upon the whole," says Mr. Bell, "I cannot but believe that the fossil bones belonged to the original stock of our domestic ox, and that the wild cattle (of Chillingham Park, the '*Bos scoticus* of authors) approach so near to it, as to leave it a matter of doubt, not whether they all belong to the same species, but whether this breed be the actual remains of that original stock, or the descendants of domesticated individuals which have resumed in a great degree their wild character, from having ceased through many generations to feel the effects of human dominion." The probability, in our opinion, is, that the wild cattle still lingering in a few of the parks of our island are the last remnants of a wild race once common in our forests, and specifically identical with our domestic breed; that the fossil relics are the remains of the primæval ancestors of that race; and that they belonged to the animal anciently known as the urus.

Still this is all hypothetical. Whatever may be the source whence our domestic breeds (in Europe, at least) have sprung, we cannot but acknowledge that they have undergone many modifications, from the influences of climate, pasturage, and the culture of man. Even the different districts or counties of our own island possess or have possessed their peculiar breeds. This distinction of breeds, though by care and attention it will become less marked, will never be entirely effaced while the grazier and the dairy-farmer aim at different objects.

In England, a country abounding with luxuriant pasturage, the ox, only used for the purposes of agricultural labour in a few limited districts, is destined to benefit the grazier on the one hand, and the dairy-farmer on the other. With the grazier, roundness of form, a moderate smallness of bone, depth of chest, and an aptitude to acquire external fat upon a small consumption of food, are among the points of excellence aimed at and expected. The attainment of perfection, however, in the points most desirable in the eyes of the grazier, is generally accompanied by a corresponding deterioration of cattle in those qualities connected with the interests of the dairy-farmer, for very seldom are combined an aptitude to fatten and the quality (in the cow) of yielding an abundance of rich milk. Both parties, therefore, attend to their peculiar interests, agreeing only in the care bestowed upon the animals subservient to their respective purposes.

Among the older breeds of cattle, but now greatly modified, was a long-horned race, of which the West Riding of Yorkshire and Lancashire were the central residence, whence it extended through the midland counties and into Ireland. This breed was termed the Craven, from a district of the same name in Yorkshire, bordering upon Lancashire, and where it is said to have originally appeared.

This old breed was large and coarse-boned, and apt to be long in the body, which, however, was destitute of roundness. The milk, if not abundant in quantity, was extremely rich, and suited the purposes of the dairy-farmer. The horns were of enormous length, sometimes they projected horizontally on each side of the head; generally, however, they swept downwards, with an inward flexure, often reaching below the level of the muzzle, or even meeting before it, so as to interfere with the power of grazing. We have seen the points press against the sides of the muzzle, rendering it necessary to shorten them.

In the beginning of the eighteenth century various agriculturists commenced a series of attempts towards the improvement of this old but ever valuable breed; and to the skill and judgment of Mr. Bakewell is to be attributed the Dishley or New Leicester long-horn. In this breed the form and the tendency to acquire fat were greatly improved, and the size of the bone reduced. To the grazier the improvement in these points was of the highest value, but the dairyman preferred the old stock. In process of time, however, the new breed extended, improving the cattle of the midland and northern counties, and especially of Ireland. Everywhere, however, the long-horned has of late years yielded to a middle or short-horned race; and even in Leicestershire—the stronghold of the Dishley breed—few are now to be seen. In Cheshire also, which till recently retained a long-horned breed, derived chiefly from the old Lancashire and new Dishley stocks, the Durham or short-horned race has made decided inroads, but with doubtful advantage as respects the quality of the cheese for which that county is celebrated. Among the long-horns may be reckoned the old Shropshire breed, a large boned and hardy race, and well fitted for the dairy. This breed is now seldom seen pure, having been crossed with advantage by the short-horned Holderness. Though the short-horns have superseded the long-horns in most parts of Staffordshire, the latter still continue to maintain their ground in the north of that county, and more particularly along the banks of the Dove and Trent, close to the borders of Derbyshire.

Between the long-horned and short-horned breeds of our cattle intervenes a race termed middle-horns, represented by the North Devonshire, Somersetshire, Herefordshire, Gloucestershire, and Sussex cattle.

The Devonshire breed is of great antiquity, and has been long celebrated for beauty. Like most of our other breeds, it has within the last fifty or sixty years become improved, and has perhaps now attained to its perfection.

The head of the Devon ox is small, but broad across the forehead and narrow at the muzzle; the horns have a graceful curve upwards; the chest is deep, and the back straight. The cow is small compared with the bull.

The system of ploughing with oxen is very generally practised in Devonshire, and where the land is not too heavy, no teams of oxen are superior, if equal to these, in this kind of work. Four good oxen are equal to three horses, and will go through as much labour on the road or in the field in as short a time.

To the grazier this breed is of great importance, few oxen rivalling the Devonshire in disposition to fatten and in the quality of the flesh. For the dairy, however, this breed is inferior to many as respects quantity of milk, but not quality, for it yields more than an average proportion of cream and butter. Some farmers, however, have found the North Devons to yield a large produce of milk; contrary to the common opinion, much probably depends upon pasturage. In Somersetshire the Devon breed prevails, or at least the original breed has been greatly crossed by the Devon, of which it presents most of the excellencies.

The Somersetshire cattle are valuable for "the pail, the plough, and grazing." The tract of country between Bridgewater and Cross produces cheese of well-known excellence; the best Cheddar cheese is made either in that tract or in the marshes round Glastonbury. The Hereford improved breed with white faces is valuable as fattening rapidly, and that on inferior fare; the flesh is fine grained, and highly prized in the market; the cows, however, yield but little milk; indeed a dairy of Hereford cattle is seldom to be found. In Gloucestershire the Herefords are preferred for the team, and by graziers for fattening, but the true Gloucester breed for milk. The Gloucester breed is of mixed origin, composed of an old race of Welsh descent, as is supposed, and of various others, and among them the Alderney. The rich vale of Berkeley produces the finest Gloucester cheese.

In Sussex the breed of cattle closely resembles that of Devonshire; according to judges it is intermediate between the Devon and the Hereford, "having the activity of the first, the strength of the second, and the propensity to fatten and the beautiful fine-grained flesh of both." Its colour is deep chestnut-red or blood-bay; deviation from these colours indicates a cross. In the Weald of Sussex oxen of this valuable stock are generally used for team-work; and so great is their strength and quickness, that many teams have travelled with heavy loads fifteen miles a day for several successive weeks without distress. As is the case with the Devon and Hereford, the Sussex cow is very inferior to the ox, and moreover does not answer for the dairy. The milk is good, but of trifling quantity. Another objection against the cows of this breed is that their temper is restless and unquiet, and they are perpetually endeavouring to break their pasture. They are kept for breeding, and as they fatten rapidly, they repay the care and trouble they occasion. A valuable breed of middle-horns extends through South Wales; and of this the Glamorganshire variety is highly celebrated. Oxen of this stock feed well; their flesh is fine grained, and the cows yield a fair quantity of milk. To enumerate all the breeds of the long-horned and middle-horned races is impossible within our limits; it is sufficient to have noticed the principal. The group at the head of this article exhibits, of the long-horns—1, the old Craven; 2, the Leicestershire; 3, the Shropshire. Of the middle-horns—4, the Devon; 5, the Hereford; and, 6, the Sussex.

UNITED SERVICE MUSEUM.

There is an institution at the west end of the metropolis, whose objects, and indeed whose existence, are hardly known to any person except those engaged in the naval and military professions: we allude to the United Service Institution, in Scotland Yard. Most of our readers are probably aware that there is a club called the United Service Club, established for purposes analogous to those which distinguish clubs generally; but the institution to which we now allude is a totally distinct establishment; supported, it is true, by many or perhaps most of the members of the United Service Club, but founded for a different purpose, and supported by a distinct fund. It resembles many of the scientific and literary institutions which have been established within the last few years, in affording to its members, all of whom must either belong to the naval or military professions, or to some civil establishment intimately connected with them, the use of a library of books, of a museum fill with objects relating more or less to the objects of the institution, of a lecture-room in which lectures on various scientific subjects are given, and of other facilities for establishing a social and advantageous communion among the members generally.

Whoever has been in the habit of reading the proceedings of the scientific bodies of London for the last few years, must have observed the large amount of scientific contributions from naval and military officers. Geographical research has been eminently advanced by them; but all the sciences have to a greater or less degree been benefited by their exertions. It is not difficult to trace the reason for this. Officers in the English service are generally men of education and refined tastes, who are capable of appreciating the benefits of science, who are often thrown into situations where they can make valuable observations, and who acquire that kind of activity which renders employment much sweeter than listless idleness. Until about a dozen years ago, there was, we believe, no institution or establishment for the mutual improvement of this large class of persons. Each officer stood alone, except when in actual service, or when attending the club, which resembles rather an hotel than an institution; there was no link which connected them for purposes of private utility. Such a link was, however, subsequently formed; and it is interesting to observe the manner in which the present institution sprang up, as indicative of the existence of a latent wish for such an establishment on the part of a large number of officers, and of the useful services which the periodical press may often render as a medium of communication.

In the year 1829 a new periodical, 'The United Service Journal,' was established, for the publication of papers and information relating to the naval and military professions; and in the second number a letter appears which may be deemed the germ from whence the present institution emanated. In this letter, which is signed "An old Egyptian Campaigner," the following passage appears:—"It has long been a favourite idea of mine, that officers of the navy and army have it in their power, from the frequent opportunities presented to them on service in almost every part of the known world, to contribute to the promotion of science and art, but more particularly in the department of natural history. The experience of nearly forty years has proved to me that a taste for reading, for information, and for general literature, has grown up rapidly in the army. I speak only of that service with which I am best acquainted. We have too many proofs in print of the scientific progress made by officers of the navy, to require any other testimony of improvement, *pari passu*, amongst the 'blue jackets.' Now my proposal is, that to give a tone of science to the character of both services, it would be a desirable point to set on foot a museum, to be formed, conducted, and maintained solely by the military, medical, and civil branches of the royal navy, the king's army, the Honourable East India Company's services, and their connections; to be called the United Service Museum."

In the next number of the 'Journal,' a second letter appears from another officer, expressing approbation of the plan, and mentioning a few specimens in natural history which he was willing to present as a nucleus for such a museum; and shortly afterwards a leading article in the 'Journal' advocated the plan at some length. From this time the letters and suggestions ceased to be anonymous: officers of distinguished rank openly assented to the scheme; and one gentleman offered to present a collection of objects in natural history, which it had taken him five or six years to accumulate. In the middle of December in the same year a meeting of officers was held to consider the best means of establishing the proposed museum. After various intermediate proceedings, the institution was finally formed about the middle of the year 1831, his late majesty, and many of the highest officers in the service, offering it their sanction and support. A building was procured for the reception of the speci-

mens; and from that time to the present the accumulation has gone on steadily increasing, until at length the assemblage comprises one of the most varied and interesting exhibitions in the metropolis.

We have given the above details in order to show the objects for which, and the mode in which, the museum has been established; and we may now briefly notice the present state of the institution, previous to speaking of the contents of the museum. Some short time back, the name of the establishment was changed from the 'United Service Museum,' to the 'United Service Institution,' as being more comprehensive. There are between four and five thousand members, of the professions or avocations before alluded to; each of whom goes through a certain form of election before he can be admitted, and then pays ten shillings per annum to the fund of the institution. There is a library, constantly increasing in extent, and open to the members at certain hours; lectures on various scientific and practical subjects; meetings, at which presents and curiosities are exhibited; and a museum, consisting almost entirely of donations from naval and military officers. The members have the privilege of admitting friends to visit the museum; and it is as the impression on the mind of a visitor that the following description of the museum is given.

The museum is contained in four or five rooms of the building wherein the affairs of the institution are transacted, in Scotland Yard, Whitehall. The vestibule contains a few antiquities and other curiosities which are worthy of a passing glance; and from thence the visitor passes into a room on the right, of considerable dimensions. This is the only room on the ground-floor devoted to the museum, as the other rooms on the same story are otherwise employed and are open only to members. Into this room, then, we enter; and find ourselves surrounded with models of shipping and other apparatus relating more or less to naval and military matters. Beginning at the east end, that at which we enter, we find numerous pieces of wood which had been taken from the wreck of the Royal George, and which have been preserved to show the different degrees in which they were affected by the sea-water; one is a block of oak nearly a cubic foot in dimension; others are pieces of elm, taken from different parts of the vessel; while there are also pieces of yarn from the unravelled ropes of the ship. Near these are portions of a ship's fittings which had been immersed in the water for a much longer period than the Royal George; for instance, there is a piece of rope which was taken up in 1840 from a ship sunk in 1711; and an iron ring which had been beneath the water at Spithead from 1545 to 1836, a period of nearly three centuries. The effect produced by the long-continued action of sea-water on different substances, might often be usefully illustrated by a collection of such specimens as these.

On the south side of the room are ranged objects of a varied character. A large model of 'La Capitana,' a Maltese galley, shows the form of vessel which was used in the contests between the Knights of Malta and the Turks in times long gone by: these galleys were sometimes nearly two hundred feet long, and were propelled by five hundred rowers, generally slaves, an arrangement which we must now deem a sad waste of human labour. More than one specimen of a life-buoy is deposited here, that is, a contrivance which, when thrown into the sea, may enable a shipwrecked mariner to remain buoyant on the water: corks and casks, bags or bladders filled with air, are among the means usually devised for this purpose. Numerous models of foreign vessels are placed along the side, illustrative of the forms most prevalent in different countries; one is a bugla, a vessel which plies between Bombay and the Persian Gulf. There is a model of a 74-gun ship, made by some French prisoners at Norman Cross, and presenting an admirable specimen of minute workmanship. Gun-carriages of various forms and sizes are represented by small models, intended in most instances to illustrate some proposed improvements in their construction. A sectional representation is given of the interior of a ship's magazine, showing how the ammunition is stored away, on an improved plan, proposed by Sir William Congreve: a series of racks or open shelves is ranged round the magazine; and on these racks the ammunition is placed in barrels and cases, the outside of each barrel and case being so marked as to denote what it contains. A model, several feet in length, represents the nature and mode of construction of a bridge of boats built across the river Adour, near Bayonne, by command of the Duke of Wellington, when he was about to lead the British army from Spain into France in the year 1814. A curious article, deposited near this model, is a camp kitchen, said to be the one from which Napoleon caused another to be made for his own use during the wretched Russian campaign: it is an assemblage of tin vessels, supported on three iron feet, and arranged so as to form a portable cooking apparatus. Among the remaining objects on this side of the room are, a tide-gauge of a new form; a line rocket, for throwing out to stranded vessels; a 'thermantidote,' or revolving machine, for exciting an artificial current of air, to cool apartments in a hot climate; and various miscellaneous objects, which we must here pass over.

At the west end of the room, we find, near one of the windows, a curious piece of apparatus: it is a sun-dial, with a gun placed in the prolongation of the twelve-o'clock line; and above the gun is a burning-glass, capable of adjustment according to the varying declination of the sun, and having the touch-hole of the gun in its focus; so that when the sun reaches the meridian, the convergence of the solar rays by the burning-glass may fire the priming placed at the touch-hole. Such appears to be the object of the apparatus; but how far it has ever been practically applied, we are not aware. Two or three planispheres deposited here show contrivances which are adopted for practically solving some of the problems in astronomy and mathematical geography. Boxes of figures, and boards more or less resembling chess-boards, illustrate the evolutions of troops in the stern game of war.

The north side of the room presents to us several models intended to explain some new improvements or suggestions in ship-building. One is a brig with revolving masts, that is, each mast is fixed to a circular stage just above the deck, on which it rotates. Another is a steam-boat, with paddles of a trapezoid form. There are also various smaller matters connected with naval affairs, and deposited as specimens of something either new or valuable, among which are two or three 'life-preserving' hats and caps, any one of which, if tied on the head, is said to possess sufficient buoyancy to keep one person afloat. That a hat or cap, containing a bladder of air or a large piece of cork, should produce such an effect, will not be surprising if we recollect that the human body, so long as water does not enter the stomach, is specifically lighter than salt or even fresh water.

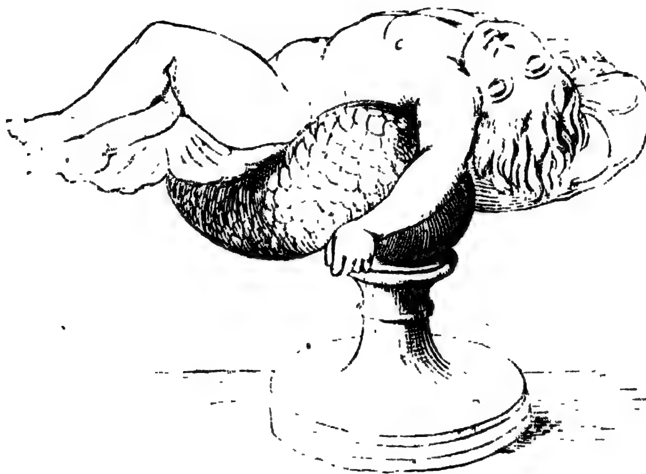
There are a few other models and other objects on the south side of the room; such as a military waggon, for the conveyance of wounded men from place to place; grenades and shells of various dimensions; haversacks, knapsacks, and pouches; a model of the Breakwater at Plymouth; models and half-models of ships; gun-boats; canoes; naval tackle; a model of the Pharos at Alexandria; a French relief-map of

Neufchatel; a relief-map of Edinburgh; and a very neatly executed relief-map, or, we should rather say, model, of part of the island of St. Vincent, with the fortifications erected on it.

Besides the objects ranged round the four sides of the room, there are numerous others occupying the centre. Immediately in front of the entrance is a 'lever target,' an apparatus for the practice of naval gunnery on board ship, without using ammunition. Two models of apparatus illustrate two modes which have been proposed for raising sunken vessels. A fine model of a 74-gun ship exhibits a specimen of the talent of the native shipwrights of Bombay, who have made many excellent vessels for the East India Company. There is also another model, deposited by Sir Robert Seppings, which is ingeniously constructed for displaying the change which has been made in the mode of building many of our ships of war. The model is of a 120-gun ship, and is made in two halves, separated by a vertical section along the middle of the ship: the interior of one half displays the old mode of arranging and strengthening the timbers of a ship, while the other half shows the diagonal trusses and braces introduced by Sir R. Seppings.

A Surinam passage-boat and models of several parts of English ships are among the objects occupying the centre of the room. A large model or plan, enclosed in a glass case, illustrates a kind of art which has been much practised of late years, and seems likely to be of great service, viz. relief or projecting maps. The one in question is a relief plan of the intrenched camp at Linz in Upper Austria, executed on a scale of one inch to a hundred yards. The model is about six or seven feet square, and exhibits the undulations of the ground, together with the positions of all the several parts of the entrenchment. Those who saw the model of the battle of Waterloo, exhibited some time back, will at once understand the manner in which these model-maps present the characteristic features of a district to the eye.

We have now noticed the chief objects of interest to be seen in the ground-floor apartment of the museum, and will next proceed to the upper stories; but a notice of their contents must be left for another opportunity.



[Sculpture by Raffaelle, at Down Hill, Ireland.]

DOLPHIN AND CHILD.

RAFFAELLE.

The deep interest attaching to every work of art emanating from the hand of this sublime genius—a genius that has fully justified the enthusiastic praises of his countrymen, and the appellation they bestowed upon him of *Il divino Raffaello*—renders the task of commenting upon so unusual a work as a production of sculpture, as agreeable as it is instructive. In former articles upon the Cartoons, we have duly paid our tribute of reverential admiration to the powers of the painter; of his reputation as an architect we may hereafter speak; but it is now as a sculptor we are called upon to make some observations.

It has often been asserted that Raffaelle, not satisfied with his eminence as a painter, and his reputation in architecture, as the successor of Bramante, was emulous of vieing with his great preceptor Michael Angelo in the third great branch of the arts of design. Many statues are vaguely said to have been executed by him, but no writer of authority has instanced more than two specimens, and even one of those is, in the better opinion, only a model by the artist, which was afterwards carved in marble by another hand. As to the other, there does not appear to be any doubt but that it was executed, as well as modelled, by the great painter himself. Of the former, which is a statue in marble of Jonah, in the Chigi Chapel of the church of Santa Maria del Popolo in Rome, and which by competent judges is considered to be one of the finest specimens of modern Roman sculpture, the most probable history appears to be this—that Raffaelle modelled the statue in clay, and that then the marble was cut, under the designer's own immediate inspection and direction, by Lorenzetto di Credi, a sculptor of great eminence at that period. Passavant, however, in his 'Life of Raffaelle,' an able review of which work appeared in the 'Quarterly Review,' No. 131, appears to consider that the marble, as well as the model, was executed by Raffaelle, and the reviewer states that such is the received opinion. This appears to be somewhat strange; for Rossi, whose work was published nearly a century and a half ago, and in which there is a very spirited engraving of the Jonah, expressly states that Lorenzetto did actually execute the marble, and that Raffaelle actively superintended the work. This is followed by Mr. Duppa, in his Life of the artist, in which he mentions this composition as "an extraordinary instance of the versatility of his powers;" and M. Quatremère de Quincy, in his elaborate account of the works of Raffaelle, also enumerates the model as made by him, and the statue itself as from the chisel of Lorenzetto. We are therefore inclined to believe that M. Passavant must either have been mistaken in his observations on this statue,

or his meaning was misinterpreted by the able critic of the 'Quarterly;' and that the latter is also in error in saying that the execution of the Jonah in marble by Raffaelle himself is the "received opinion." On the contrary, we conceive that there can be little doubt but that the account in Rossi's work is entirely correct. We have entered into this statement because the subject is of itself very interesting; and as the article in the 'Quarterly,' with which we differ, is believed to have been written by an artist of great eminence, and who from his long residence at Rome may fairly be supposed to have full information on the subject of which is the "received opinion" there concerning the Jonah.

Respecting the Dolphin and Child, an engraving of which, by Mr. Jackson, is at the head of this paper, the writer last referred to speaks of it thus:—"It appears that the statue of the Wounded Child borne by a Dolphin, a subject from Ælian, probably suggested by Castiglione, was also by the hand of the master himself. A cast from this is in the Dresden gallery. The marble itself cannot be traced." Whether this statue is the one referred to in an anonymous manuscript at Milan of the date of Raffaelle, the author of which says that there was a statue of a child executed in marble by the great artist, and which was then, at the period of the author's writing, in the possession of Giulio Romano, we cannot positively say; but there is a high degree of probability that it is. Still it is difficult to account for the fact of all notice of so remarkable a feature in the group as the dolphin being omitted. Mr. Duppa thinks that of this statue of the Child being by Raffaelle there can be no doubt, since it is recognised by Count Castiglione in a letter written by him to M. Andrea Pipeiario in the year 1523, and which is to be found in 'Lettere Pittorice,' vol. v., p. 161. "But," adds Mr. Duppa, "what became of it is not known." This circumstance further induces us to believe the two are identically the same, notwithstanding the difficulty before noticed. It is also worthy of observation that M. Quatremère de Quincy, in his Life of Raffaelle, in the 'Biographie Universelle,' omits all mention of any statue by him, except the model of the Jonah.

Having prefaced thus much, it is gratifying to add that the treasure is within the limits of the United Kingdom. The marble statue of the Dolphin and Child was brought to Ireland by the late earl of Bristol, bishop of Derry, and it is now in the collection at Down Hill in that country. The existence of it was unknown even to M. Böttiger, the learned custode of the casts from the antique sculptures in the Dresden gallery, until the year 1824, when an Irish traveller informed him of the place of its deposit. A sketch permitted to be taken by the possessor was forwarded to M. Böttiger, which, upon comparison with the Dresden casts, was found to confirm the traveller's statement. The marble is the size of life, and turns upon a pivot so as to be readily viewed in all points of sight, and its truthfulness of attitude and exactness of proportion are thus by investigation rendered more apparent.

Thus, then, we may boast of the possession of the greatest specimens of painting of "the divine Raffaelle" in the world, the Transfiguration of our Saviour alone excepted, namely, the Cartoons at Hampton Court; and, without comparison, of the most exquisite and interesting example of his powers as a sculptor. Indeed if the statue of a Child, mentioned by Castiglione, be identical with the statue under notice, we have in our possession the only known work in marble executed by his hand; and if it be not identical, we have the only specimen of his sculptural genius, the exact locality of the depository of which is clearly ascertained.

SIR DAVID WILKIE.

So universal have been the expressions of regret at the loss which not only Great Britain but the world at large has sustained by the calamitous and unexpected death of this truly great artist, that we should not do justice to our own feelings of personal sorrow and our sense of professional bereavement were we not to offer a few observations on his artistic skill and judgment. Of the personal amiability of Sir David Wilkie it will suffice to say that we agree in the praises which have been by other writers bestowed upon him. We shall not encumber these pages with a biographical history of him, which may as conveniently be sought elsewhere, but our purpose shall be to give our views upon his merit as an artist, and our reasons for entertaining those views, and to point out in what instances and why we differ from the general current of opinion respecting his works.

Among the practitioners of the art of design the instances are numerous of men attaining at once to a high degree of eminence, and in no case has it been more completely exemplified than in that of Sir David Wilkie. At the age of twenty-one, his Village Politicians was painted, and that production contained all the excellencies for which his pencil has been noted, whether of design, of expression, or of execution, up to the period at which he changed his style, as will presently be adverted to, and in the following year, 1807, the Blind Fiddler, now one of the chief ornaments of our National Gallery, gained for him that fame which remained undiminished to the hour of his death.

The value of such works as those of Sir David Wilkie is not to be estimated alone by the excellence of their conception or the exactness of their completion. The sentiment conveyed or the moral inculcated is of far higher import. To present that sentiment or convey an impression of that moral, no vehicle is so universally useful as the familiar class of painting. The subject being within the scope of the million, the truth or falsehood of the representation is at once apparent, and by so much as the scene gives token of reality, in the same degree does it rivet the attention. Thus, when the mere eye is sufficiently gratified by the external verity, the mind becomes active in reflecting on the intention of the painter. If, then, such intention be to elevate the feelings, or amend the heart, or improve the understanding, and if the effort has been successful in all or either of these, then our admiration of the skill of the artist, great as our applause may be, will sink into an insignificant consideration as compared with our estimation of the intent and power of the moralist. Second only to Hogarth, and that in point of time, but by no means in respect of artistic ability, Wilkie stands prominent amongst the professors in the English school. If in the series of the Marriage à la Mode we confess the mind of a philosopher and the imagination of a wit, we cannot but admit a quiet vein of reflective humour to run through the productions of the Scottish genius. If Hogarth were superior to Wilkie, of which we entertain no shadow of doubt, in the more subtle qualities for the inception of his subject, we are as firmly convinced that Wilkie immeasurably exceeded Hogarth in the practical application of his pencil. The aim of Hogarth seems to have been to render his art subsidiary to the great work of morality, and not to render his pictures attractive merely by their useful tendency; he appealed at once to the judgment, the hopes, and the fears of the spectator, relying more upon the subject he had chosen, and the mode in which he had treated it, than upon the manual dexterity he had displayed or the artist-like success he had achieved over the difficulties of his

calling. On the other hand, Wilkie, though ever apparently sensible of the importance of inculcating a moral sentiment, has not shown us that a profound store of reflection guided him in his choice of subject, but he has laid before us in his familiar pictures scenes that speak at once to the understanding and the feelings of the spectator, however humble he may be, and in these works triumphs of art convincing alike to the most cultivated as to the most ignorant in the principles of painting. In a word, then, if our estimate of the relative merits of these great masters be correct, Hogarth was possessed of the higher qualities of imagination, Wilkie was endowed with the more perfect command of his pencil. To be second to Hogarth is, in our opinion, to be second only to the greatest artist of his class that the world has yet produced; it will, therefore, be considered that we speak of Wilkie in no detractive spirit.

No painter has more completely imbibed the principles of composition and of light and shade adopted by preceding artists than has Sir David Wilkie; yet there is no one who can be named who is more clearly safe from the charge of being a plagiarist or an imitator. The expansive breadth and the lucid clearness of Teniers, the truthfulness and minute discrimination of Wouvermans, and the exquisite finish of Ostade, may all be found combined in one picture by Wilkie, yet in no work, nay in no part of any one work, will there be perceived the slightest imitation of either. Possessing these high qualities in the executive department of his art, it is not surprising that Wilkie, with a mind stored with the best principles of composition, and an eye keenly alive to all the peculiarities of expression, should have triumphantly mastered the difficulties which presented themselves to him in his progress. If, in addition to all these advantages, we find the artist avoiding the grossness of subject and indelicacy of treatment adopted by his great predecessors, we arrive at a high and justly high estimate of the value of his work. In this respect, however, we must again refer to Hogarth, because, in admitting that he was habituated to coarseness of subject, we must bear in mind that such became necessary in enforcing the moral he wished to convey, but that similar coarseness was uncalled for from the pencil of Wilkie, since he did not aim at objects of such elevation or importance.

Of the genius, then, of Sir David Wilkie, it may be safely said that it has advanced one class of painting to a scale far higher than before his time it had been carried, thus rendering scenes the most familiar and homely vehicles for disseminating morality or of enforcing truth. In this point of view we must admit that the world of art has sustained a grievous loss in the artist's death, and though we have a high degree of confidence in the resources of the British school, we have fair reason to fear that the lapse of time will be long before his place will be adequately supplied. Thus much we may affirm respecting the subjects which Sir David adopted, and the style in which they were executed up to the period of his visit to Madrid, which event took place at some period during the years 1826 to 1828. From that time the style of Wilkie was entirely changed. The principles of the Dutch and Flemish schools were abandoned for the more forcible and vigorous contrasts of the Spanish. In a word his pictures thenceforward contained a vast prevalence of dark, instead of a great predominance of light. The only quality of execution which he retained to the last was that of scrupulous exactness of imitation and extreme care in finish. The homeliness of every-day life gave place to the stirring activity of war; the tranquil pursuit of pastoral and rustic existence could no longer compete in the artist's mind with the moving incidents of flood and field. The vigorous touch displayed in these works, the forcible arrangement of the light and dark, in some measure repay us for the loss of his humbler class of subjects, but a want of the greatest of all qualities of a painter, namely, expression, renders it clear to us that we have not gained by this change in Sir David Wilkie's style. We can do no better in support of this view than refer to a picture which has been lauded beyond all others of his painting, we mean, the Preaching of John Knox. Critics, instead of confining their praises, as they ought to have done, to the powerful and masterly management of the contrasts of light and shade, and the vigorous style of execution, have been lavish of their commendations of the manner in which the story is told, or of the 'expression' of the composition. The attentive reader of history knows full well that this is wholly unfounded. The harangue of Knox before the beautiful queen so angered some, that they would have murdered him upon the spot, whilst it so transported others with enthusiasm, that they rushed from the church and demolished the houses of the religionists who had been denounced from the pulpit. Is this, or are passions probably leading to such results, apparent in Sir David's picture? We think not. Instead of this, we do see in one part the figure of a raving fanatic, and in the remainder a congregation of automata. For this reason it is we cannot go along with the general voice in favour of this so-called masterpiece of his hand.

We have still another point upon which to dissent from the all but universal opinion,—the merit of the portraits painted by this artist. These are generally referred to as woful drawbacks upon his fame, and the milder class of critics have been pleased to affirm that the just eminence of his other works may fairly be considered as counterbalancing the defects of these. Such opinions may do well for those who know not that the same principles guide the painter in portrait as in historical composition. To attract the attention of the spectator to the chief point of the picture is managed by the same means in each, and, therefore, to depreciate a good portrait as a work of art is in itself absurd. Whether or not a man so highly gifted as Wilkie was well and profitably employed in transmitting the resemblances of his conventionally great contemporaries may be a matter of question. Many may think, and, perhaps, we are of the number, that his time might have been far better appropriated by the execution of works in his own unrivalled manner. Yet we must not be too hasty in condemning the use of so gifted a hand in the art of portraiture. Who would wish that Raffaelle had not given us the resemblance of his illustrious patron Julius II., now in the National Gallery? Who regrets the time bestowed by Sebastian del Piombo in the portrait of Giulia Gonzaga, in the same collection? or who but prizes the labour of Titian in that of Francis I., in the Gallery of the Louvre? If such strict notions had been held heretofore, these three magnificent works of art would not have existed, and who will venture to say that each of them is not valuable, nay, of the highest value, on other grounds than as representations of the individuals themselves?

To pass over many, we may not inaptly allude to the portrait of the Duke of Wellington, by Sir David Wilkie. It may not possess the charm with which the late accomplished President of the Academy invested his performances, but it gives us in every atom of it a most characteristic delineation of the great commander. The unflinching brow, the unhesitating compression of the lips, the fixed determinedness of purpose and the uncommunicative self-reliance shown in the steady gaze, all betoken that the artist did not feel himself a

mere limner when he executed it, but considered that he was transmitting to future ages the resemblance of one who was rightfully deemed a chief ornament of his own. Such a portrait as this forcibly brings to mind an anecdote which is told of the Duke. On one occasion it was said he had left the army for the purpose of bringing a large reinforcement, and on his return alone, an old soldier, upon seeing him, enthusiastically exclaimed, "God bless his honest face, the sight of that will do more good than the help of ten thousand men."

Had Sir David Wilkie, at the time he did change his style of colouring and his class of subject, entered at once, as his great powers of execution would have justified him in doing, upon the highest scale of his art, namely, heroic or poetic composition, we entertain no doubt but that he would have left such productions as would have successfully competed with the works of the two painters whom he especially admired, namely, Caravaggio and Spagnuoletto. The force and vigour of both would have been delineated, with the powerful yet harmonious contrasts of the latter, but without the turgid exaggeration of the former. As it is we must rest content that we have amongst his works specimens of the best order of the lower class, and others of the same rank in a higher, but still not the most important class of painting; and further, we must admit that in both he has afforded us most valuable examples of carefulness of finish and minuteness of detail, without the slightest appearance of obtrusiveness in either.

Piccadilly.—Before that time (1778), where Apsley House now stands, stood a tavern, called the Hercules Pillars, the same at which the redoubted Squire Western, with his clerical satellite, is represented as taking up his abode on his arrival in London, and conveying the fair Sophia. The character of the house in Fielding's time is implied in the speech put into the Squire's mouth when he says he looked upon the landlord as a fit person to give him information respecting fashionable people, seeing their carriages stopped at his house. It seems to have been a comfortable low inn, in the outskirts of the town, at which gentlemen's horses and grooms were put up, and whither farmers and graziers resorted. In front of the inn (and in front of Apsley House, till a comparatively recent period), a square rather pyramidical column stood by the kerb-stone, on which was engraved the distance from the Standard in Cornhill. Between the three houses next to Apsley House and Hamilton Place was a row of small houses, one of them a public-house, called the Triumphant Chariot. It was a watering-house for hackney-coaches, and by the kerb-stone in front of it was a bench for the porters, and a board over it for depositing their loads. Such resting-places for that strong-backed fraternity were once universal in front of this class of houses, and they are still bright spots in our memory, associated with sunny days in June tempered by light breezes, with watering-troughs for the horses, and with deep draughts of stout for the men, such as are idealised in Hogarth's Beer-Street. (A specimen of the class is given in the engraving below.) About forty yards west of Hamilton Place was the street mentioned by Faulkner as deriving its name from the Hamilton family; it contained twenty small houses, and two or three on a larger scale; they were pulled down, and Hamilton Place built, about thirty-five years ago. Where the opening of Hamilton Place is now, was a one-storied building, occupied by a barber, as we have been told by one upon whom that functionary has operated, before the march of comfort had taught every man to handle his own razor, as well as to be present at the shaving of his own beard. Between Park Lane and Hyde Park Corner there was a terrace elevated some feet above the road, which was lowered within the last thirty years; the houses between Hamilton Place and Apsley House are sometimes called the Terrace still. In this part of Picadilly a Mr. Winstanley had, about the beginning of the eighteenth century, his "water theatre,"—a house distinguished from its neighbours by a "windmill on the top of it, in which curious effects produced by hydraulic pressure were exhibited in the evenings." Evelyn speaks of Winstansley as an ingenious man, and Steele alludes to his theatre in the 'Tatler.' The eccentric Sir Samuel Moreland, also a mechanical genius and acquaintance of Evelyn, dates a letter from his "hut near Hyde Park Gate."—*London*, No. XVII.



[Watering-house, Knightsbridge.—1841.]



[a, Alderney Cow; b, Alderney Bull; c, Rev. Mr. Berry's Cow; d, Lord Althorp's Bull; e, Lord Althorp's Cow; f, Polled Cow; g, West Highland Cow; h, Glamorganshire Cow; i, Lincolnshire Ox; j, Rev. Mr. Berry's Bull; k, Yorkshire Cow.]

CATTLE.

The most extensively diffused breed of cattle on our island, and by far the most valuable and beautiful, is the short-horned. In this breed almost every excellence is united. The form is admirable; the cows are excellent as milkers; and the oxen fatten quickly and attain often to an enormous weight. It appears that Durham and some parts of Yorkshire had long possessed a breed of short-horns of large size and celebrated for the quantity of milk yielded by the cows, but in figure and in aptitude to fatten, as well as in the quality of the flesh, inferior to other breeds. This unimproved breed still lingers, and is certainly valuable to the dairy farmer, who might, however, substitute the improved breed for it with advantage. It is about eighty years since the improved breed began to be established on the banks of the Tees, owing to the judgment and care of the breeders of that district; it differs from that of the old short-horns, in possessing an excellent figure, and in aptitude to acquire fat. It is supposed that the Teeswater short-horns have a cross of the white wild breed, and to this circumstance is attributed the prevalence of white among them. The first improvement of the short-horns, resulting in the establishment of the Teeswater race by Mr. Milbank and others, paved the way for the successful exertions of subsequent spirited breeders, who, by pursuing a

judicious plan in crossing, have brought the breed to the highest pitch of perfection. Of these Mr. C. Colling was one of the most successful; the celebrated 'Durham ox,' which was exhibited in the years 1801-5-6, was the produce of an ordinary cow and a bull termed *Favourite*, of the stock of Mr. Colling. "At five years old," says the able writer of the work on Cattle, "the Durham ox was sold to Mr. Bulmer of Harmby near Bedale, for public exhibition, at the price of 140*l*. This was in February, 1801. He was at that time computed to weigh 168 stones of 14 lbs., his live weight being 216 stones; this extraordinary weight did not arise from his superior size, but from the excessive ripeness of his points." The Durham ox in a short time passed into the possession of Mr. J. Day, who "travelled with him through the principal parts of England and Scotland, till at Oxford, on the 19th of February, 1807, the ox dislocated his hip-bone, and continued in that state till the 15th of April, when he was obliged to be slaughtered; and notwithstanding he must have lost considerably in weight during these eight weeks of illness, his carcass weighed—the four quarters, 165 imperial stones, 12 lbs.; tallow, 11 imperial stones, 2 lbs.; and hide, 10 imperial stones, 2 lbs.

Among the most remarkable of Mr. Colling's experiments in breeding, was that of a cross between the improved short-horns and a polled Galloway cow, the produce of which, being interbred with pure short-horns, gave origin to a breed called the *Alloy*, first indeed by way of contempt, afterwards of commendation, for at a sale of Mr. Colling's cattle, forty-eight animals (cows, bulls, year-old bull-calves, heifers, and heifer-calves) realised 7115*l*. 17*s*. One bull named Comet sold for one thousand guineas, and a cow (Lily) for four hundred and ten guineas. The portrait of a cow, one of the stock of the late Rev. H. Berry, is given in the work on Cattle as a specimen of the *Alloy* breed. In every point her figure is excellent, and her milking quality is stated to be good.

Among the most celebrated short-horns of the present day Lord Althorp's breed is one of the most distinguished. It is derived from the stock of Mr. R. Colling, and no pains have been spared in bringing it to the highest possible excellence. A bull belonging to this nobleman, and called Firby, is almost perfect as the model of the improved short-horn, and may indeed be regarded as a type of the breed.

Excellent as milkers, the cows moreover fattening rapidly when dried, and the oxen, as it is acknowledged, being fit for the butcher even as early as two years old, still it has been objected that the short-horns are unfitted for the team; but this Mr. Berry asserted to be a mistake. That gentleman, who died in August, 1836, had a team of two-year-old short-horn steers working nine hours a day; but, as he observes, cattle which are profitable to the breeder for sale at two years old, and are as ready for the butcher at this age as any other breed at three or even four, ought never, as a general rule, to be placed in the yoke. Still, however, where circumstances render it expedient, their employment may be admitted, and indeed the bulls, being extremely docile, may be judiciously employed in many operations going on in every farm; a plan, the more advisable, as the bulls are apt to acquire too much fat, which moderate labour would tend to diminish.

A breed of short-horns from Lincolnshire supplies, to a great extent, the Smithfield market. These cattle are by no means first-rate animals; the head is coarse, the bone comparatively large, the leg high, and the hips wide. In many instances, however, the stock has been improved by a mixture of the Durhams, and by the care of breeders who have diligently pursued a judicious system of selection. Lincoln oxen, thus improved, are valuable; but the flesh is not fine-grained. The Lincoln cow yields a fair quantity of milk; on the whole, however, the breed is more profitable to the grazier than to the dairy farmer. Leaving the short-horned breed of cattle, we may now turn to some varieties which we have hitherto omitted to notice. Of these the Alderney cattle are familiar to most.

The Alderney cattle are imported from Normandy and the islands on the French coast, from one of which (Alderney) they take their name. These cattle are small, and often awkwardly shaped, every point being more or less defective; still they are favourites, the cows yielding milk, if not in great quantity, yet of peculiar richness and abounding with butter. Improbable as it might seem from the appearance of the Alderney, its aptitude to fatten is remarkable: the cows, when dried, speedily become fat, and sometimes acquire considerable weight. Still, with the exception of Hampshire, these cattle are not kept in any county on an extensive scale; it is in the pleasure-grounds of the gentleman that they are chiefly to be seen. In Hampshire, however, they are very general. Mr. Gawler states that "the stock best adapted to the soil of that county are the Alderney and the smaller races of Norman cows. The Devonshire and larger breeds require richer pasture; and although they may be kept in condition, the milk they give is by no means in proportion to the bulk of food they consume. Mr Gawler's dairy stock was in the proportion of one cow of the Devonshire breed to three of the Alderney or Norman, and the milk was mixed on the presumption that, being thus diluted, it produced better butter, and a larger quantity of it."

In the Highlands of Scotland a small breed of black cattle prevails, of which large herds driven southwards, and depastured in the grazing-lands of England till fat, ultimately find their way to the London market. Of this race there are several varieties; of these we may notice the Kyloes of the Western Islands and the Hebrides, a small, hardy, well-formed race, thriving on coarse fare, and producing fine-grained meat, highly flavoured, and commanding a good price in the market. "The different islands of the Hebrides," says Mr. Youatt, "contain about one hundred and fifty thousand of these cattle, of which it is calculated that one-fifth are annually sent to the mainland, principally through Jura, or across the ferry of the Isle of Skye. If these average about 5*l*. per head, the amount will be 150,000*l*., or more than the rental of the whole islands, which Mr. Macdonald calculated at 106,720*l*., but which now produce a greater sum. Cattle therefore constitute the staple commodity of the Hebrides. Three thousand five hundred are annually exported from the Island of Islay alone."

In the north of Argyleshire, the cattle are larger than those of the Hebrides, and are bred to the full size which the pasturage will admit and the good qualities of the animal bear without deterioration. It is in this district that the most perfect Highland cattle are oftenest seen. These cattle are short, and rather strong in the shank, round in the body, straight on the back, with a fine muzzle, and sharp small horns. As they wander over a wild country, they are wild and often fierce, and their eye expresses energy and spirit. It is solely for their flesh that herds of these cattle are reared; "every effort," says Mr. Youatt, "to qualify them for the dairy will not only lessen their hardiness of constitution and propensity to fatten, but will fail in rendering them valuable for the purpose at which the farmer foolishly aims." In the stewartry of Kirkcudbright, together with part of Ayrshire and Dumfries, forming the old province of Galloway, a beautiful polled or hornless breed of cattle exists, highly

esteemed for their many excellencies. In figure they are admirable, excepting that the neck of the bull is almost too thick; but the chest is deep, the limbs clean and short, the back straight, and the body round. Black is the prevailing colour. These cattle exceed the Argyle breed in size; they fatten well and quickly, and their flesh is excellent; "they lay their fat," says Mr. Culley, "upon the most valuable parts, and their beef is well marbled; few cattle sell so high in the Smithfield market, and it is no uncommon thing to see one of these little bullocks outsell a coarse Lincolnshire bullock, although the latter is heavier by several stones."

The Galloway cattle are remarkable for gentleness; and robust and muscular as the bulls are, one of mischievous habits and bad temper is seldom met with. Ayrshire, Aberdeenshire, Perthshire, and other districts have their peculiar breeds. In Wales several breeds of cattle are to be found; in the Isle of Anglesey there is a fine race of middle-horned black cattle, with a deep chest, heavy shoulders, enormous dewlap, and round body. The appearance of the bulls of this breed is very noble and imposing; the expression of the head is animated, bold, and even fierce; and this character is not lost altogether in the oxen and cows. It is calculated that upwards of ten thousand are annually exported from this island. The flesh of these cattle is of first-rate quality. The numerous inferior crosses or mongrel breeds of doubtful origin, into which the cattle of our island have ramified, need no especial notice.

We cannot close our observations without express reference to Mr. Youatt's admirable work on Cattle (*Library of Useful Knowledge*), a work replete not only with solid practical information, but with the utmost interest even to the general reader.

A Parsee's Impression of the Thames.—Here we were greatly surprised to see the amazing number of ships going out and pouring into the Thames, and steamers every now and then running backwards and forwards: we cannot convey to our countrymen any idea of this immense number of vessels and the beauty of the sight. You will see colliers, timber-ships, merchantmen, steamers, and many other crafts, from all parts of the world, hastening as it were to seek refuge in a river which is but a stream compared to the Ganges and the Indus, or the still larger rivers of America. We thought it a great wonder that such a small and insignificant speck as England appears on the map of the world can thus attract so many nations of the world towards her; and we asked ourselves, why should not those mighty rivers and countries, which have naturally much better accommodations for commerce than England, be frequented as much? But a moment's reflection satisfied us on this point: the answer presented itself; and we will tell our countrymen that it is the persevering habits of the English, it is the labour and skill of that people that is the cause of such attraction. They are never satisfied with any one thing unless it is brought to perfection, it does not matter at what sacrifice. They are ever ready to receive improvements; and thus they have attained that celebrity in their manufactures, that countries which grow materials bring them here to be converted into useful things, which are distributed all over the world; and while other countries were satisfied with what they had, England was eager to augment her resources. When we came within about five miles of London, we were surprised at the amazing number of vessels, from the humble barge to the more beautiful ships and steamers of all descriptions. The colliers were the most numerous; and vessels were anchored close to each other, and the river seemed to be almost covered with vessels; and the masts and yards give it the appearance of a forest at a distance. Indeed, there were to be found ships from all parts of Europe, Asia, Africa, and America; and a great number of steamers ply about in all directions, filled with passengers. None of our countrymen can form any idea of this noble river and the shipping on it. The English may well be proud of it, though a small stream compared to some of the largest rivers of the world.—*Two Years and a Half in Great Britain, by Two Parsees.*

The Penny Postage. Anticipations and Results.—Increased facilities are no less an essential feature of the plan than reduced postage. At present, with some exception, the reduction alone is in operation. Until, therefore, opportunity shall arise for adding the stimulus of increased facility, the complete fulfilment of my expectations manifestly cannot reasonably be looked for. Keeping this consideration in mind, I proceed to observe:—1st, That I calculated that a fivefold increase in the number of letters (that is, an addition of fourfold) would sustain the gross Post-Office revenue. 2nd, That in consequence of the simple and economical arrangements proposed, such an increase in the number of letters would involve an addition of not more than about 300,000*l.* per annum to the expenses of the Post-Office. 3rd, That there would, in such case, be a consequent diminution in the net revenue to the same extent; in other words, that the net revenue would fall from about 1,600,000*l.* to about 1,300,000*l.* 4th, I held out the expectation, but without attempting to fix the time required, that the above increase of fivefold would eventually be obtained. 5th, Though I held out no expectation publicly as to the result of the first year, yet I did in conversation with many persons express an opinion, founded, however, on the supposed realization of the whole plan, that the first year's increase would be to the extent of threefold. 6th, I gave it as my opinion that the public would be found willing to pay its postage in advance. 7th, That the infraction of the law, in the illicit transmission of letters, would, in effect, cease on the reduction of the postage. 8th, That the increased opportunity of communication consequent on the adoption of the plan, would produce great moral, social, and commercial advantages; and would prove particularly acceptable and beneficial to the poorer classes. Further, that the deficiency reckoned upon in the net revenue of the Post-Office would eventually be made up by increased productiveness in other fiscal departments. Such were the expectations I held out. The next question is, to what extent the trial of the plan, so far as it has yet been developed, has wrought their fulfilment. With respect to the first three heads, it is as yet impossible to test my anticipations as to the effect of a fivefold increase; but we have the means of testing them on such increase as has been obtained. The increase in the chargeable letters is now to about 2½-fold; and should therefore, according to my calculation, afford about half the former gross revenue; but we have already seen that whereas the former gross revenue was about 2,350,000*l.*, the present gross revenue is about 1,350,000*l.*, or considerably more than half: so that, even after making some necessary allowances, my anticipations are thus far, at least, fully realised. With respect to the increased expenses consequent on the adoption of the plan, a reference to p. 82 of my pamphlet (2nd edition), aided by a little calculation, will show that the anticipated increase from the present number of letters (viz. 2½-fold the old number) is 58,000*l.* The real increase fairly chargeable to Penny Postage is, as shown before, only about 41,000*l.* With respect to net revenue, a similar reference and calculation will show that the amount anticipated from the present number of letters is 128,000*l.* per annum. The actual net revenue for 1840 is 165,000*l.* Of my expectation that the complete adoption of the plan would eventually secure a fivefold increase in the number of letters, I trust the Society will be of opinion that, considering the ground already made good, and the present rate of progress, resulting in both cases from the partial operation of the plan, there can be no reasonable doubt that such expectation will be realised. Next, my expectation that the complete adoption of the plan would produce, in the first year, a threefold increase in the number of letters, appears fully justified by the fact that its partial adoption produced, in the same time, in increase of nearly 2½-fold. To justify my anticipations respecting the public willingness to pay the postage in advance, I need only refer to the 1st and 2nd Returns cited before, and to the experience of every one present. Next, I have the pleasure of reporting that, so far as information can be obtained, the illicit transmission of letters has, in effect, ceased. Such are the consequences of the plan, so far as it has yet been developed; and I leave the Society to estimate the results of its complete adoption.—*From a Paper by Mr. Rowland Hill, read before the Statistical Society.*

A kind refusal is sometimes as gratifying as a bestowal: he who can alleviate the pain of an ungracious act is unpardonable unless he do so.



THE CID.—No. X.

"May the God in heaven protect thee;
Guard thee from all treachery!"



When the time was come for the departure of the Cid for Toledo, to join the Cortes, which had been convoked by the king, he arrayed himself "in sable armour studded with golden crosses from the gorget unto the greaves," mounted his horse Babieca, and was arranging his cloak about him, when Ximena seized his stirrup, and thus addressed him:—

"'Look ye well, my Lord Rodrigo,
That thy vengeance perfect be,
For the shame that through thy daughters
These base counts have brought on thee!

Can it be that two such cravens
To affront my Cid can dare,
When two thousand mailed warriors
Would not meet thee in the war?

May the God in heaven protect thee;
Guard thee from all treachery!
For such as are cruel and craven,
Well, methinks, may traitors be.'"

"Enter not, my lord," she added, "into battle with these men; verily, it behoveth not one who hath vanquished so many kings thus to tarnish his glory; honor not with thy sword the filthy blood of these counts, for Babieca, with his neighing alone, hath overthrown much stouter foes." Having committed her and his daughters to the care of Martin Pelaez, the Cid struck spurs into his steed and set out for Toledo.

Sorely did the Counts of Carrion dread to attend the Cortes, knowing they should there meet the Cid; but lest they should not be held for good and true liegemen, they obeyed the summons, accompanied by their uncle Don Suero, who had been with them in Valencia, and had counselled them to their dastardly revenge. The thirty days allowed by the king for his nobles to attend the Cortes and prove their loyalty passed, and the Cid came not.

"Out then spake the Counts of Carrion,
'Hold him, king, a traitor now!'
But the good king gave them answer,
'Traitor!—none is he, I trow

My Cid he is right true and loyal;
He hath won full many a field;
Yea, in all my wide dominions
None like him the sword can wield.' "

As he thus spake, in came the Cid with nine hundred hidalgos in his train, clad in robes of the same cloth and hue, and thus saluted the king:

" 'God preserve thee, king Alfonso!
May God keep ye, nobles all!
Save yon caitiff Counts of Carrion:
Heaven's vengeance on them fall.' "

He would have cast himself to the earth at the king's feet, but Alfonso swore by St. Isidore (his favourite oath) that it should not be so. "We salute thee, Cid, with heart and soul; what grieveth thy heart, grieveth ours also." Whereon the Cid kissed his monarch's hands. The court was adjourned to the following day; and "he who in a good hour girt sword" spent the night in prayer and watching in San Servan.*

The Cortes assembled the next morning in the palace of Galiana, in a council-chamber hung with costly brocade and carpeted with velvet. The poem gives a full description of the dress our hero wore on this occasion; and considering the great antiquity of that work, it is much more likely to be accurate and characteristic of the age than the descriptions of costume contained in the romances, which, being preserved orally, were subjected to the alterations of many succeeding ages. It is briefly this:—Hose of fine cloth, with elaborately wrought shoes; a linen shirt, "white as the sun," with fastenings of gold and silver, and tight wristbands; a gold-embroidered tunic worn under a red fleece fringed with gold, which fleece "my Cid was always wont to wear" even over his hauberk of mail; and over all a mantle of great price. His head was covered with a scarlet cap worked with gold, and his long beard was tied up with a cord. In his beard the Cid took great pride, and never suffered it to be cut, so that "it was the talk of both Moors and Christians," for, according to the poem, he had sworn, on taking Valencia—

" 'By the love of King Alfonso, who hath exiled me from home,
No hair shall of my beard be cut, no shears unto it come.' "

When the Cid entered the Cortes, his long beard struck admiration and awe into all present, and all gazed stedfastly on him, for right manly was his aspect" —all save the Counts of Carrion, who dared not for shame regard him.

The king opened the court by enjoining silence. He next appointed six *alcaldes* or judges, from his own royal council, and made them swear by the Evangelists that they would thoroughly inform themselves of the evidence on both sides, and judge without fear, favour, or prejudice. Then he called upon the Cid to state his charge. "He of the long beard" straight arose, and commenced by urging his claims:

" 'Long it is, oh! King Alfonso,
Many a year hath passed o'er,
Since Tizona in thy service
Hath been clean of Paynim gore.

Many a weary year Ximena
On her widow'd couch hath mourned,
While a thousand Moorish banners
In the battle I o'erturned.' "

* We think the poem must here refer to a castle of that name which still stands, though in ruins, on a height to the east of Toledo. It is said to have been built by the Moors, and if so, must have existed in the time of the Cid; and it was probably in this, or in a sanctuary in the immediate neighbourhood, that he kept his vigils, as it is evident that it was without the city, and on the opposite bank of the Tagus.

He proceeded to state his charge against the Counts, and then demanded his two swords Tizona and Colada, for they belonged not to the Counts, who were no longer his sons-in-law; and he said they must be "an hungered, as they were not fed as in former days." The king turned to the Counts, but they said nought in their defence, and the judges ordered them to restore the swords to him who had won them. The Chronicle says that they refused to obey this command; whereon the king arose in great wrath, and took them from their hands, and delivered them to the Cid. Rodrigo received them with great delight; "his whole body was gladdened and his heart laughed with joy;" and he called them his dear pledges, not precious because bought with gold or silver, but dearly purchased by the sweat of his brow in battle. He next demanded that the two thousand marks and all the jewels he had given his daughters on their wedding-day should be returned to him. The judges, seeing that the Counts had deserted their wives, immediately acceded to this demand, and called upon the Counts to pay back the dowries, which they did by delivering up horses, mules, and swords to the full value. The Cid a third time arose from his seat, and with eyes flashing with ire, and hand grasping his beard, which "no son of woman had ever touched," he opened his grand charge against them, calling them "false and villain-hearted dogs of traitors. .... As God liveth, ye are brave knights to lay hands on women; had ye to do with king Bucar, I wot, we should hear another tale. Right truly saith the proverb, that some warriors are as valiant with their feet as others with their hands. Ye, methinks, are of the former." In conclusion he challenged the Counts and their uncle to mortal combat, for the stain they had inflicted on his honour was one which blood alone could wash away.

Hereon the king called upon the Counts for their defence:

" Out and spake the elder brother,
Turning to the king, said he,
'Sire, thou knowest we are noblest
Of Castille's nobility.

True it is, we left these women,
Whom it was not meet to wed.
Dire disgrace it were to mate us
With the daughters of the Cid.' "

Furious was the rage of the Cid's followers, but all held their peace save Don Ordono, his nephew, who exclaimed,—

" 'Hold thy lying tongue, Diego,
Utter not such falsehood foul!
Strong and stalwart is thy body,
But thou hast a craven soul.' "

"Thou tongue without hands! how durst thou speak thus? Inasmuch as they are women, and ye are men, they are in all respects better and worthier than ye." "Remember," he proceeds to say to the other brother, "thy shameful flight from the Moor beneath the walls of Valencia, when I slew thine adversary for thee, and gave thee his spoil to show it as a trophy of thy prowess. I did it to honour thee, for that thou hadst wedded my cousin:—

" 'Nought of this have I e'er utter'd,
Nought should from my lips depart,
Were I not this day constrained
To proclaim how vile thou art.' "

He then reminds them both of their cowardice when the lion broke loose, and ends by branding them with baseness and cruelty:

" 'He's no noble, maugre lineage,
Who doth chivalry despite;
He who layeth hands on women
Is a villain, and no knight.' "

The Counts, with their uncle Suero Gonzalez, were obliged to accept the challenge, for by victory alone could they hope to establish themselves guiltless of the charges brought against them; and the Cid was called upon by the king to appoint three knights to do battle in his name, which he did, to wit, Pedro Bermudez, Martin Antolinez, and Nuño Bustos. As the court broke up, messengers came in from Navarre and Aragon, demanding the Cid's daughters in marriage,—Doña Elvira, the eldest, for Don Ramiro, son of the king of Navarre, and Doña Sol for Don Sancho, heir to the throne of Aragon.

My Cid had already set out for Valencia, when he turned his rein and besought the king to take Babieca, saying, that it was not meet that he should keep so renowned a steed, which belonged of right to his liege lord. "Nay," said the king, "not so; for were I to take him, he would not have so good a master as now. Verily, if he were mine, I would give him to thee, as to him who could employ him with most honour to himself and to me." Then the king crossed himself and said, "I swear by St. Isidore, that in all my realm there is none like unto the Cid!" Rodrigo kissed his lord's hands, and with great joy and contentment proceeded on his way.

The traitor Counts excused themselves from the combat in Toledo, on the ground that they could not equip themselves to their satisfaction, save in their own town of Carrion. King Alfonso, therefore, courteously allowed them to depart, and followed them to Carrion, with the six judges of the fight and the three knights appointed to do battle in the Cid's name. In the plain adjacent to the town he found the tents pitched and everything prepared for the battle, but the kinsmen and partizans of the Counts mustered in such numbers, and were so formidably armed, that Alfonso suspected treachery, and, knowing the Counts to have more treason than valour, he caused it to be proclaimed,—

"Whoso shall do wrong or outrage
To the squires of the Cid,
List! his head and his possessions
Straightway shall be forfeited."

This grieved the Counts sore, for they had agreed with their followers to slay the Cid's men before the combat; then they besought the king, saying,—

"'King! a boon we crave!—forbid it
That our foemen in the fight
Wield Tizona and Colada—
Faulchions they of wondrous might!'"

"Nay, Sir Counts," replied the king, "I can grant ye none of this. Ye can equip yourselves in what arms ye please, there is none to gainsay ye. Ye are stout and stalwart; fight, then, with valiant hearts."

Our limits will not allow us to give the details of the battle. The result was that the Cid's warriors were victorious, and, according to a letter which the king wrote to him, giving a full description of the combat, one of the brothers was left dead on the field; though another romance agrees with the Chronicle in saying that they all escaped with their lives, but were so covered with shame that "they fled from the land, and never more lifted up their heads." Pursuant to the prevalent but absurd notion of trial by combat, that right was always victorious, the six judges then decreed that the two counts of Carrion, with their uncle Suero Gonzalez, were base and infamous traitors, thenceforward incapable of honour, and all their possessions were forfeited to the crown.

The three victors returned to Valencia, to the very great joy and rejoicing of the Cid.

"Down upon his knees he cast him,
And his hands uprais'd to heaven,
Praise and thanks to God he render'd
For the vengeance he had given."

"He grasped his beard, and cried, "I thank the King of Heaven, my daughters are avenged!" He hastened to inform Ximena and his daughters of the joyful news. Elvira and Sol heard the tidings with manifestations of unbounded delight, "with joy as great as joy could be."

"Praise and thanks to God they render'd,
Then they ran with haste amain,
Forth to greet the good Bermudez
And his valiant comrades twain.

Eager in their arms they caught them,
And would fain their hands have kiss'd,
But the warriors forbade them,—
Great the damsels' joy, I wist."

After this the nuptials of the Cid's daughters were celebrated with the Princes of Aragon and Navarre,—"See how honour floweth to him who in a good hour was born!"—and thus the Cid became the progenitor of kings, "sending," says a modern traveller, "through almost every royal house of Europe a vein of heroism which is not slow to proclaim itself."

UNITED SERVICE MUSEUM

[Concluded from page 277.]

We noticed the contents of the lower room in the Museum in the last paper, and postponed a visit to the upper rooms till another occasion. We now complete our notice.

Returning from the model-room to the vestibule, we find a staircase opposite the entrance from the street; and round the wall of the staircase are ranged spears, arrows, and darts, of various kinds, brought from different counties of the East. The staircase leads to a handsome suit of rooms, three in number, occupying the whole width of the building, and opening into each other. The eastward of the three rooms is denominated the Armoury, and is devoted to the reception of objects which its name denotes. The middle room, which is a kind of small closet over the entrance hall, contains specimens in natural history; as does also the west room, together with other articles not coming under that designation.

On the floor of the middle room is placed the stuffed skin of a koodoo, a species of South African antelope. Round the four sides of the room are glass cases, containing various specimens; in some instances, of stuffed birds; in others, of the nests and eggs of birds. The specimens are numbered; and tickets, fixed to some of the glass cases, contain the corresponding numbers, together with the names of the respective donors. Almost all the objects in the Museum have been presented to the institution, and are so labelled as to denote from whom they were derived.

The west room contains a large number of objects. Beginning with the east or entrance end, we find a glass case containing various specimens of stuffed birds; other glass cases, together with a nest of drawers, filled with mineral specimens; bottles containing small animals preserved in spirits; and stuffed skins of crocodiles and lizards.

The south side of the room presents us with many animals preserved in glass cases, and others without that protection. There is an ant-eater, a peccary, a stoat, monkeys, snakes, hares, foxes. There are two gifts from Captain Back, which possess a kind of living interest, as having figured in the narrative of his Arctic voyage. One is a large white polar bear, which came within a few yards of the Terror, in search of

food, and was then shot: when opened, its stomach was found entirely empty. The other is an Arctic wolf, which carried off a favourite little terrier belonging to Captain Back, but was killed before he could effect his escape: the poor little terrier is represented in the wolf's mouth. It is scarcely necessary to remark that, in all these instances, the animals are stuffed to their natural sizes and forms. There are, towards the other end of this side of the room, specimens of dried plants, in glazed frames; cases and drawers, containing entomological specimens; skulls, shells, and skeletons of various species of fish; a porpoise, about a yard in length, which approached almost close to London Bridge, in the year 1832, and was there captured. The upper part of the wall contains a few pictures, either of naval scenery or portraits of naval officers; and beneath a picture of the Battle of Trafalgar is a document, which, though it appears rather misplaced among objects of natural history, is of much interest in a naval—we may perhaps say national—point of view. It is an autograph letter from Lord Collingwood to Sir Peter Parker, written just after the battle of Trafalgar, in which Nelson lost his life, and giving an account of such details of that eventful day as may be looked for in a familiar letter rather than in an official document. Memorials of this kind, in the handwriting of distinguished men, are generally prized when the grave has closed over the writers: and the feeling which prompts an affectionate regard for such objects is appreciated and understood by most persons.

The west end of the room contains three or four "ants' cities;" several specimens of the crab, starfishes, shells, cases filled with entomological specimens, bottles in which small reptiles are preserved in spirits, and other objects in natural history. One of the insects is placed within a microscope, and the microscope so situated as to afford with facility a greatly magnified view of the insect—a plan the occasional adoption of which would be a boon to visitors in entomological cabinets of higher pretensions.

Nearly the whole of the north side of the room is occupied by cases and nests of drawers, containing insects, shells, and mineralogical specimens. The middle of the room also contains, among many other objects, cases similarly filled. Stuffed monkeys, antelopes, and reptiles are placed on stands in various parts of the room. The vertebra, the tusk, the grinders and the skull of a whale, the skull of a bison, the skull of an elk, the skull and horns of a buffalo, the skulls of a hippopotamus and of an alligator, together with parts of the skeleton of a bear, a narwhal, and a shark, are among the objects occupying the centre of the room. Elevated on a lofty stage is a kind of military trophy, if we may apply the term to such an object, viz. the skeleton of Marengo, the barb charger which Napoleon Bonaparte rode at the battle of Waterloo.

The remaining objects in this room, such as glass cases containing anatomised plants, collections of sea-weed, &c., we must pass over, and proceed to the Armoury, the most eastern of the three apartments. A figure in complete armour here confronts us in the middle of the room; but we will leave him for awhile, and proceed round the room. On the walls of the room, on the side where we enter, are hung weapons of various kinds, such as crossbows, swords, spears and pikes, a sword of the Elizabethan times, various pieces of armour as worn in the time of Oliver Cromwell: these are on the right hand or north of the door, and the left-hand side is occupied in a manner nearly similar.

Proceeding from the entrance towards the north side of the room, we find, beneath the windows, glass cases containing many objects, trifling in themselves, but possessing a value in the eyes of military and naval men, from the same causes which render autograph letters interesting. There is the crimson sash by which Sir John Moore was borne to and lowered into his grave, after his retreat and death at Corunna—a retreat more glorious than most victories. There is a piece of gold lace, which once decorated Nelson's coat at Teneriffe. There is the sword which was worn and used by Oliver Cromwell, and the sword which General Wolfe wore at Quebec. Between the cases which contain these relics are specimens of weapons of different countries and ages, such as a Highland claymore used at Culloden, an Indian tomahawk, Asiatic swords and daggers, European swords, &c. There are also, in different parts of the room, stands on which several pieces of arms are tastefully arranged, each stand containing the military and naval fire-arms used in the English service in some one particular reign. For instance, there is one stand for arms of the reign of William IV., another of George III., another of George I. and II., a fourth of William III. and Anne, and a fifth of James II. All these were presented to the institution by the Board of Ordnance, and constitute a faithful index of the changes which have occurred in these matters.

Among the objects contained in the north and east sides of the room, besides African swords and daggers, Asiatic swords and daggers, and similar articles from other places, are two small relics which are preserved as memorials of events which have long become matter of history. One is a piece of a cocoa-nut tree near which Captain Cook was standing when he received his mortal wound at Owhyhee: the tree was pierced with balls during the brief conflict which ensued, and the piece brought to England shows the marks of many of them. The other relic is a small gun which belonged to the 'Bounty' at the time of the "eventful" mutiny, and which was brought by an English officer from Pitcairn's Island two or three years ago.

On the south side of the Armoury we find specimens of arms brought from various countries; some from China, and others from India, including the lance once belonging to Runjeet Singh, the ruler of Lahore. Ranged in an oblong parallelogram, near the middle of the room, are stands, on which are placed several curious specimens of armour. On the stands nearest to the door, on the left hand, are shirts or coats of chain armour, each one formed entirely of metallic chain-work, linked together in a flexible form, but so as to afford a very effective defence to the body. There is nothing of the stiffness unavoidable in plate armour; but still these garments would be deemed anything but light in our days, when deeds of chivalry are matters to be read of, not practised. A figure of a man, opposite the door, is decked with complete armour, or, in the language appropriated to these matters, 'armed cap-à-pié.' Indian fighting dresses, obtained from various tribes, occupy some of the stands; as also clubs and spears; war jackets formed of hempen rope; and an Afghan warrior's fighting-dress. Attached to some pillars which support the ceiling of the room are likewise arms belonging to various nations. On one of the stands is a blue jacket or short cloak, which, if judged by its present condition, would possess but a low market-value; it however becomes a cherished relic when known as the cloak which Bolivar wore through many of his hard-fought campaigns: it is made of blue cloth, and bears evident marks of hard service. This room also contains a glass case, in which a few relics are deposited, such as the swords of officers who have earned for themselves an honourable distinction; a fusil once belonging to Bonaparte: a razor and shaving-brush also belonging to him, and

taken at Waterloo; and a fragment of his coffin, brought to England a few months ago.

As there is still one other room to visit, we must pass over the other objects deposited in the Armoury. This other room, constituting the fifth in the Museum, is on the second floor of the building, and is approached by a staircase whose wall is decorated much in the same manner as the lower staircase. This upper room contains objects of a very miscellaneous kind. On the entrance side the wall is decked with dresses, brought from various barbarous or semi-civilized countries, and illustrative of the tastes and arts of their inhabitants. Among them is an entire dress of seal-skin worn by the Esquimaux; a dress formed from an inner integument of the whale, by the natives of California; dresses of the South-Sea Islanders, Chilian cloaks; leggings worn by the South Americans during their excursions among the Cordilleras of the Andes, sandals, mocassins, and shoes, from various tribes, and other articles of dress from similar sources.

The south side of this room contains, in cases, small objects of so diverse a character that we hardly know what term to apply to them. Among them are two or three rosaries; a phylactery, which is a bandage worn by the Jews of some Eastern countries, and containing a verse or two from the Scriptures; some French assignats, a kind of promissory note, the extravagant use of which, during the early part of the Revolution, led to ruinous consequences, an exchequer tally for one and a half millions sterling, which reminds us of the manner in which the national accounts used to be recorded. Then there is an autograph letter of Marshal Marmont, the tinder-box and other apparatus with which "Jack the Painter" endeavoured to fire Portsmouth Dock-Yard, in 1776, a map of Spain and Portugal perforated by a bullet which killed a French officer, who had the map folded over his breast, and a few other miscellaneous articles.

The next or west side is chiefly filled with trinkets, implements, and ornaments, brought from various parts of Asia and Africa There is also a little slab of marble brought from a cross which Bartholomew Diaz erected on the western shore of Africa, during the journey which ended in the discovery of the Cape of Good Hope To these succeeds a collection of feather-dresses, made by some of those rude nations who occasionally devote so much time to the preparation of fantastic dresses Numerous other dresses, made of fibrous materials, which appear evidently to have been woven, are placed here, as well as petticoats made of twine or small rope Coins, terra-cottas, a model of a Parsee sepulchre, a Chinese pair of bellows, and other matters, are distributed in various parts of the room; and in a glass case is a relic with which we must make our bow to the collection, viz. a cocked hat once worn by Lord Nelson.

It will be evident from this cursory notice of the contents of the United Service Museum, that there is, to say the least of it, the germ of a very interesting and indeed important collection. A process of classification has already been commenced; and as the collection is being constantly increased, this classification will be carried out to greater extent. We believe that it is in contemplation to provide larger premises for the reception of the objects; and there seems little doubt, from the active enterprise of officers in the service in many parts of the globe, that valuable additions will continue to be made to the store. At present the specimens may perhaps be deemed as belonging principally to the following divisions:—naval and military models; naval and military arms; naval and military relics; illustrations of the arts and manners and customs in foreign countries; coins and other monuments of past ages; and natural history.

Iron and Coal.—It is most extraordinary to see the multiplicity of purposes to which iron is now applied, steam-boats, and, indeed, steam-ships are now built of iron Mr Waghorn has carriages on the desert, on the overland route to India, composed entirely of iron, lighter than they could be made of any other material, and possessing this advantage, that hot weather will not cause them to shrink. Iron cables we have all seen, and the strong prejudice that existed against them of their want of elasticity is dying away; for, singular as it may appear, iron cables have, in use, really more elasticity than hempen ones, for a ship always rides with her hempen cable in a state of tension (that is, drawn out in a line from the anchor to the ship's bow), but, on the contrary, from its weight the iron cable always hangs slack (bellying, as sailors term it), and the fact is, when the ship heaves, the giving up of this bellying of the cable yields greater relief than the elasticity of the hempen cable can possibly do. We have chain used for standing rigging and for securing the bowsprit, we see it used most extensively for knees of ships; we use it in ships for hawse-holes, and for facings to bit-heads, it has been used for boats; it is used by thousands of tons for railroads. Within doors in England every domestic article may be met with in cast-iron; it is used for staircases, for mantelpieces, and for cooking-kettles, and in the churchyard it is used for monuments instead of tombstones; on the high-road it is extensively used to supersede milestones, and we hear that it is used even for coffins. How much does England owe to her inexhaustible mines of coal and of iron! It is to them she is indebted for all her riches. Gold and silver mines are not to be compared to those of coal and iron gold and silver would employ but few persons, and enrich but very few, but coals and iron in their processes afford employment to countless thousands.—*Two Years and a Half in Great Britain, by Two Parsees*.

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Mustard Tree.—"There was one curious tree," say Captains Irby and Mangles, in their 'Travels in Egypt,' &c, "which we observed in great plenty, and which bare a fruit in bunches, resembling in appearance the currant, with the colour of the plum It has a pleasant, although strongly aromatic taste, exactly resembling mustard, and, if taken in any quantity, produces a similar irritability of the nose and eyes to that which is caused by taking mustard. The leaves of the tree have the same pungent flavour as the fruit, although not so strong We think it probable that this is the tree our Saviour alluded to, in the parable of the mustard seed, and not the mustard plant which we have in the north, for although in our journey from Bysan to Adjeloun we met with the mustard plant, growing wild, as high as our horses' heads, still, being an annual, it did not deserve the appellation of 'a tree;' whereas the other is really such, and birds might easily, and actually do, take shelter under its shadow This discovery will be of much interest to those who are aware of the great difficulty which has been experienced in identifying the tree to which our Saviour alludes, when comparing the kingdom of heaven "to a grain of mustard seed, which a man took and sowed in the earth, which is indeed the least of all seeds, but when it is grown, is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof." (Matt., xiii 31, 32) The Jewish writers speak of a mustard tree, common among them, in quite corresponding terms, seeming to show that a species of the *Sinapis*, or some analogous genus, existed in Palestine, with which we are not well acquainted, and which may very probably prove to be that which Captain Mangles has pointed out It is to be regretted that he did not make himself acquainted with its name As to the more common species of mustard, of which he incidentally speaks, we may as well mention here, that it was probably the *Sinapis Orientalis*, attaining, under a favouring climate and circumstances, a stature which it will not reach in our climate. This species is common in Palestine. In essential character it differs little from the *Sinapis arvensis* (which supplies the "Durham mustard"), being distinguished chiefly by the beak only of the pod being smooth.—*Natural History of Palestine*.

Safe Dependence.—A firm trust in the assistance of an Almighty Being naturally produces patience, hope, cheerfulness, and all other dispositions of mind that alleviate those calamities which we are not able to remove.—*Spectator*.



[Landscape with Cattle and Figures.—Wouvermans.]

GRATUITOUS EXHIBITIONS OF PICTURES.

DULWICH GALLERY.

We know of no painter of landscape whose works are more familiar to the generality of admirers of art than those of Wouvermans (or, more properly, Wouwermans). Indeed, there appear to be more of his best efforts in English collections than in any of the continental galleries, either public or private. At Dulwich there are no less than eleven, a circumstance which probably arose from the great market-value in this country of his pictures; for the person who originally collected these works, Mr. Noel Desenfans, was a dealer in such matters. Upon his decease, they passed to Sir Francis Bourgeois, by whom the whole were bequeathed to the master and wardens of Dulwich College.

The popularity of this painter mainly depends upon the familiar nature of his subjects. They are always such as appeal to the understandings of the many, though their management is usually of that order which requires some insight into the principles of art fully to value. But even without wholly appreciating the merit of one of his pictures as a work of art, we can readily see that there is a fidelity in the minutiæ, an accuracy in the drawing, and a delicacy in the finish, which at once appeal to the eye and gratify its perceptions.

The gallant cavalier, the rude and simple boor, the homely housewife, or the industrious artisan, find able and vivid representatives in the emanations of his pencil; nor is the exactness of his anatomical knowledge of the horse or the spirit of his delineation of its variety of action less worthy of devotion. The distinctive marks by which the various trees and shrubs with which he enriches his landscapes may be known, are always carefully developed; and though the painting of them is made subservient to the general effect of the whole subject, still they present to the view just representations of Dutch nature; and indeed the entire aspect of his landscapes cannot fail to impress upon the spectator a vivid notion of the scenery of the painter's native country.

The composition of the picture from which Mr. Jackson has executed the wood-engraving placed at the head of this article, is one of a very unusual character, and such as required all the painter-like skill and dexterous management of the artist to render effective. A single glance will satisfy us of the fine manner in which Wouvermans has overcome his voluntarily adopted difficulties. A mind less stored than his own

with the principles both of linear and aerial perspective, might have so placed the two carts that they could readily be distinguished as to their relative distances from the foreground, by their position on the line of the picture. He has not resorted to any such means; but with a boldness, entirely justified by his masterly success, has depended alone on his command of aerial perspective to afford the scale of such relative distances, and has placed one of the vehicles immediately, or nearly so, above the other. Had there been the slightest failure in the nice gradation of tints between these two objects, the intervening space, and the high bank of the river, the whole truth of the work would have been destroyed. As it is, however, it is impossible not to be struck with the charming fidelity to nature displayed in every part. The figures and the horses are drawn with life-like precision, while the mode of execution, its freedom, lightness, delicacy and finish, qualities rarely combined, render the Landscape with Cattle and Figures a work of high order in this particular class of painting. Truly may it be said, in the words of Hazlitt, of the animal life here introduced, "there is immense knowledge and character in Wouvermans' horses;" though neither in this nor in the vast majority of his pictures can we agree with the same critic, that "he seldom gets beyond the camp or the riding-school."

The defect frequently observable in the paintings of Wouvermans, and upon which we shall at a subsequent part of this paper enlarge, namely, the heaviness of the skies, is not so apparent in the present subject as in other and more celebrated, though by no means superior specimens in the Dulwich collection. Indeed, in this Landscape with Cattle and Figures there is a consistency of management which fully compensates for the darkness of the sky. All is harmonious and subdued; no glare of sunshine in one place, and inky blackness in another; no effect produced upon the earth, for which an observant spectator cannot find an adequate cause in the source of light.

The history of this artist is shortly as follows:—he was one of three sons of Paul Wouvermans, a painter of history, of little celebrity, who all adopted painting as a profession. He received the rudiments of his education in the art from his father, and then studied under John Wynants, a landscape painter of great eminence. So rapid was his advance under this most judicious instructor, that he was even permitted, at an early period, to decorate the works of Wynants with figures and animals, which he knew so admirably well how to represent. On quitting the studio of Wynants, Wouvermans carefully painted from nature, in the neighbourhood of Haerlem, the place of his birth, and from which locality it is generally believed he never removed. Notwithstanding the great merit of his works, he languished in poverty and obscurity, though to supply the wants of his family he was compelled to work with unceasing diligence. His pictures were bought at insignificant prices, and rather, even then, it would appear, from a feeling of compassion for the artist, than any estimation of his labours. At the time that Wouvermans painted, Peter de Laer, known by the name of Bamboccio, was in great vogue with the collectors of Holland; and whilst that artist's works were eagerly bought, the native master was allowed to pine in neglect. De Witt, however, it is said, became aware of the powers of the unnoticed painter, and having become the purchaser of a picture by Bamboccio, engaged his countryman to execute a companion one to it, which, when completed, the purchaser declared to be in all respects superior to that of De Laer. Whether this applause would have induced greater employment, it is impossible to say, for Wouvermans died soon after, expiring at the age of forty-eight, in the year 1668. Indeed, it has been asserted that the expression of approbation so unusual to the painter's ears had such a deep effect on him as to cause his speedy dissolution. But whatever was the immediate cause of his death, it is clear that he lived and died in poverty. He had so keen a sense of the neglect he experienced, that before his decease he destroyed a great number of his drawings and other valuable works, declaring that as his exertions had been so ill recompensed, his son should not by the possession of them be induced to follow a pursuit from which he had himself derived nothing but beggary and wretchedness.

Admitting, as we cheerfully do, the many excellencies of Wouvermans, we cannot but think that he has been by many writers extravagantly overrated. With a reverence for the acute critical judgment of Sir Joshua Reynolds, we feel bound to say that the encomiums he bestows upon him are, in our opinion, far higher than deserved. The President, after admitting that some of the painter's works, those of his earlier and of his later days, "have not that liquid softness which characterizes his best works," observes, "upon the whole, he is one of the few painters whose excellency in his way is such as leaves nothing to be wished for." Mr. Pilkington adds his tribute of applause by saying, "his skies, air, trees, and plants, are all exact and lively imitations of nature;" and Mr. Bryan follows in the same strain, declaring "his skies and distances, his trees and plants, are the genuine representations of nature."

Now it is precisely because we believe that the skies of Wouvermans are not "exact," or "lively," or "genuine" representations of nature; it is for the reason, that in the vast majority of his works the skies have not "that liquid softness" which is desirable as an accompaniment to the scenes he depicts, that we do not so greatly admire his labours; and it requires no very extensive degree of reading to know that it was this leaden and unnaturally gloomy appearance of the skies in his works which induced the Dutch connoisseurs to neglect them as they did. In a word, a careful examination of the many pictures which are in this country will satisfy the inquirer, that in a great number of instances the artist has thrown the light of a broad sunshine upon his grounds and figures, whilst the sky is composed of heavy slate-coloured clouds, the manifestation of which is utterly inconsistent with the presence of the sun. Indeed, in more parts than the skies of many of his pictures is this heaviness or slatiness of hue observable, and the effect is to detract, in our opinion, in a very vast degree, from the other manifest excellencies of his works.

Thus freely stating our objections to the general tyle of Wouvermans, we must join with his encomiasts in awarding our praise to the charming truth of his figures, horses, and cattle, and to the exquisite purity and lightness of his touch. The groups he introduces are masterly in the extreme; free, easy, and full of character, and when in action replete with graceful activity. His pencilling of the foregrounds is admirably contrasted, by its greater fulness and vigour, with the minute touches upon heads and hands, and the ornaments of the figures, and the accessories of his compositions. Indeed, we are disposed to think that but for the one defect we have pointed out, the praise of Sir Joshua Reynolds, that "upon the whole he is one of the few painters whose excellency in his way is such as leaves nothing to be wished for," would have been richly merited.

The works of this artist generally represent hunting and hawking parties, horse-fairs, encampments, halts of travellers, farriers' shops, and other subjects like that at the head of this article, which afford the opportunity of introducing animal life in great variety, and

which he has done in a manner so correct and spirited, that he has never been surpassed, and very rarely equalled. The number of these productions, highly finished as they are, is truly surprising, and bear witness that the painter must have possessed a most fertile invention, and a no less perfect command of his pencil.

ENDEMIC AND EPIDEMIC DISEASES.

CERTAIN of the diseases which afflict the human body are found to be confined to particular localities, and are thence termed *endemic*, from two Greek words signifying that which is in or among a people. Others again, which, prevailing only for a certain time over a greater or less tract of country, afterwards disappear, again to return at uncertain periods, are termed *epidemic*, from Greek words signifying upon or over a people. A few general particulars concerning each of these, separated from medical details, will prove perhaps interesting to the reader.

ENDEMIC DISEASES are for the most part attributable to some peculiarities of the soil, air, food, or habits of the localities in which they appear. Abject poverty, and its necessary consequences, want of cleanliness, bad or deficient diet, and moral degradation, is the fertile source of these maladies; while the removal of many of these evils is often attended with the disappearance of the endemics. We may lay it down as a law, says M. Andral, that the number and gravity of many of these complaints are found in an inverse proportion to the degree of civilization and comfort diffused in a country. Countries formerly healthy have become the sources of the most pestilential diseases, not from any change of climate they have undergone, but from the existence of bad institutions, which have neglected the cultivation of the arts of industry. Thus Egypt, formerly so healthy, is now never free from the plague. A great part of the coast of Italy, formerly rendered inhabitable by the Romans, is now the seat of malignant fever, while in Ireland the typhus fever annually sweeps off thousands of the inhabitants of its cities. On the other hand, he adds, in any country in which human intelligence is permitted to increase and develop itself in every point of view, so does the sanatory state of its population augment. Thus it is well known to what an extent various diseases (we may mention plague, cutaneous affections, scurvy, &c.) have disappeared of late years in European cities. All experience tends to prove that the health of a country will be proportionally good to the degree of comfort enjoyed by its inhabitants. M. Villerme states that the number of deaths in the different parts of Paris is not so much proportionate to the crowded state of the houses as it is to the number of houses which are untaxed in the different localities. So too the improvement in the state of prisons affords a pleasing proof of how much the amelioration of man's condition rests with man himself. Thus the mortality in the prisons of Lyon, from 1800 to 1806, averaged one in nineteen; from 1820 to 1826, one in forty-three; at Rouen, from 1812 to 1814, one in four; from 1815 to 1826, one in fifty-one. Although we may do much, yet there are external influences in operation less under the control of man, the chief of which have reference to the state of the atmosphere, or of the aliments employed. Many of these are, however, susceptible of amelioration by improving the physical condition of the localities, or, where this is impracticable, removing from them. A small class of these maladies are not explicable upon any known grounds. Medical observers are by degrees becoming convinced that for the due comprehending the nature and relief of endemical diseases a more accurate study of topography than has yet been undertaken is essential.

It has been remarked that the inhabitants of countries or places in which diseases prevail endemically are very often exempt from other serious forms of disease. The natives of a country often become inured by habit to circumstances which at once manifest their evil influence upon the newly arrived stranger. This is especially seen in tropical regions. In countries, too, inhabited by different races of men, as the Negroes and Malays, the Negroes and Americans, the same circumstances do not produce the same effect upon these different varieties. The water of the Seine produces disorder in all but the Parisian who is accustomed to its use. So too the treatment of the self-same disease is often found to be required to be different, according to the locality in which the person affected resides, and even to the rank of society to which he belongs.

We will now enumerate some of the principal endemical diseases.

A more perfect example of an endemic could scarcely be found than the *Pellagra*, which attacks so large a proportion (a sixth or seventh part) of the inhabitants of the alluvial plains of Lombardy, stretching out between the Alps and the Po. The public hospitals, large as they are, are insufficient to accommodate all the subjects of this disease, many of whom perish in their own habitations, or drag on a lingering and miserable existence. The disease, on its first appearance, much resembles erysipelas, leaving the skin, however, very rough: attacks are renewed from time to time for the space of three or more years, during which the skin becomes entirely altered from its natural structure, and takes on the appearance "of the dry black skin of a fish;" and this roughened appearance of the skin has obtained the disease its name. The patient loses the use of his limbs, and becomes the victim of severe pains in different parts of the body, and of a most tormenting sensation of heat down the spine, depriving him of rest by day and sleep by night. The mind is also frequently disordered from the intensity of the suffering, and Dr. Holland found one-third of the patients of the lunatic hospital at Milan to be sufferers from this disease. A propensity to suicide frequently exists, and the mode of committing this has so frequently been by drowning, that Strambi calls the disease *hydromania*. The cause of the disease is involved in obscurity. The Milanese physicians attribute it to the poverty and bad diet of the peasantry (it is rarely found in towns), and Vaccari calls it emphatically the "mal de misère." The diet is almost exclusively vegetable, consisting of bad sour rye-bread, maize, rice, &c.; for rarely, if ever, does the poor peasant, in that prolific soil, partake of the herd he tends or the juice of the vine he cultivates. "Had Rogers and Wordsworth," says Dr. James Johnson, "while celebrating the borders of Como and Lago Maggiore, representing them as terrestrial paradises, been acquainted with the pestilence that afflicts one-seventh of the inhabitants, they would have curbed a little their poetic fancies, or added a background to the picture."

The *Plica Polonica*, or plaited hair, is a curious disease prevalent in Poland especially, although it is sometimes also seen in Russia, Prussia, Belgium, and Hungary. The popular opinion is that it was introduced into Poland by the Tartars in the twelfth or thirteenth century, but some authors assign as late a period as the sixteenth for its first appearance. The disease consists in an exuberant growth of the hair, which becomes matted and interlaced in the most inextricable confusion. So far from desiring to prevent this, however, the Pole is proud of it, and endeavours, by the addition of grease and hot woollen bonnets, to

increase it; while the women for the same purpose knot instead of curling the hair, and apply to it glue or resin. When we add that a fetid odour attends the complaint, it will readily be imagined that the subjects of it present a disgusting exhibition of filth and disease. It is looked upon by many as a special gift of Providence, as preventive of other sickness and calamities, while a beggar possessing a plica finds in it a certain resource for procuring alms. The hair thus sometimes increases prodigiously, and while a length of two or three feet is often met with, in other cases it has trailed along the ground as the individual walked. The nails frequently partake of the disease, becoming yellow, long, and crooked, like the talons of a bird. The chief inconvenience attending the affection is the great weight of the hair, which sometimes amounts to several pounds, while any dragging motion applied to it, by irritating the bulbs, is productive of great suffering. The beard often becomes plicated in the same manner. Bachstrom mentions that of a Jew which touched the ground; and Corona saw at Rome a Polish hermit whose beard fell from his bed on to the floor. Various animals are subject to this disease, but it is especially among horses that it is found both in Poland and Russia: the Pole leaves no means untried to produce the plicated state of the mane of his horse, which sometimes acquires a great length.

Although this disgusting disease has been attributed to various causes, filth is now pretty generally believed to be the most predominant: it is seldom seen among the better classes, but is especially found among the Polish Jews, a large proportion of the community, and perhaps the filthiest inhabitants of Europe. The French surgeons soon cured the Polish recruits by cutting off the hair, and paying great attention to cleanliness, while the disease has diminished in proportion as the condition of the population has improved.

The emanations from the surface of the earth, known by the appellation of *miasmata*, or *malaria*, although we are ignorant of their nature, produce very marked effects upon the human economy in the localities where they exist. In our own country these miasms chiefly proceed from marshy districts, producing the well-known disease called ague or intermitting fever, and which prevails endemically in the fenny and swampy districts of Lincolnshire, Cambridgeshire, Essex, &c. In warmer climates, and especially when aided by deficient or bad food, and the accumulation of animal filth acting upon a dense population, the several descriptions of pestilential fevers are produced, as, for example, those which ravage the south of Europe, the coasts of Africa, and the West Indies. The extent to which the malaria prevails in the Campagna di Roma is well known, causing all who can do so to quit Rome from the month of July to that of October. Although marshy districts are well known as being pre-eminently capable of producing the malaria, yet are they not exclusively so: the result of numerous observations proves that the only circumstances essential to its production are the recent presence of water or mere moisture, and the influence of solar heat. When the quantity of water present is very great, the effects of the malaria frequently do not manifest themselves until this subsides. Thus travellers in Africa have found the danger greatest at the commencement of the rains; when these have continued some time, the sickness has abated, again to be renewed upon their cessation, when the soil has become somewhat dried by the evaporation from its surface. So in the Burmese war it was found that at the subsidence of the inundations our troops chiefly suffered. Dr. Ferguson relates that a most destructive form of fever showed itself in the army which pursued the course of the Guadiana after the battle of Talavera, that river being dried up into little pools. At other times, during the Peninsular war, the worst fevers were found to occur when the great heat which prevailed had dried up the surface of the earth, the emanations escaping from the cracks and fissures which resulted. The collections of low brushwood, or of reeds and grass termed jungles, generate a malaria, producing what has been called the jungle fever. The inundation and draining of rice grounds has proved a most fertile source of disease both in India and Europe. Napoleon intended to have prohibited its cultivation in Italy and France, as the emperor of Russia had already done in part of his dominions.

Other sources of malaria are found in the cultivation of indigo, the steeping of flax, the mud left after the drying up of ponds and marshes in summer, the turning up of land which has long laid as pasture, neglected drains and sewers in warm weather, &c. &c. Dr. M'Culloch observes that alluvial ground, even when not marshy or intersected by ditches, is yet often very productive of malaria, as is seen in the vicinity of the Swiss lakes and along the borders of the principal rivers of France. The peat-bogs in Scotland and Ireland do not produce malaria.

Many circumstances influence the development of the effects of malaria; thus it has sometimes been carried to great distances, and to situations topographically healthy, by winds and currents of air; while also the felling of woods and forests has often, by exposing a quantity of damp soil to the action of the sun's rays, generated miasmata (or by the removal of a natural screen which had heretofore resisted their progress from surrounding parts), in a site hitherto uncontaminated by their influence. It is sometimes very local in its influence: thus, the inhabitants of one side of the Kent road near Rochester suffered severely from ague, while those on the opposite were quite free from it. Strangers are sometimes less liable to be attacked in malarious districts than the inhabitants. Sir James Clark found this to be the case with the French, German, and English artists residing at Rome, who seldom were seized with the fever until the second or third year of their residence; and he considers the fears of suddenly acquiring the malaria by merely passing through its districts as quite groundless. The residence in a malarious region not only disposes to the production of attacks of fever, but to a general disorder and decay of the vital powers; and the change which thus takes place is forcibly depicted in the countenance. Dr. James Johnson, an experienced traveller, describing it in the Lombardo-Venetian plains, thus expresses himself:—"The alluvial debouches of the Scheldt, the Nile, the Oroonoko, Euphrates, Ganges, Danube, and Po, have so deteriorated the health of man, and stamped on his visage such indelible marks of disease, that the most superficial observer can never forget the humiliating portrait. Dr. M'Culloch remarks that the inhabitants of France and Holland are very averse to allowing that any of the maladies result from the influence of malaria, and endeavours to explain their origin in a variety of ingenious modes. He says that it may excite a smile in our country to know that "the people of Walcheren repelled with no small indignation, at the time of the celebrated visit of our troops, the charge of unhealthiness which was brought against their beloved birth-place."

[To be Continued.]

Necessity for Pleasures.—In every community there *must* be pleasures, relaxations, and means of agreeable excitement; and if innocent ones are not furnished, resort will be had to criminal. —*Channing.*



[The Monk and the Friar.]

CHAUCER'S PORTRAIT GALLERY.

THE MONK.

The order of regular priests in the Roman Catholic church, that is to say, of those who had taken vows of perpetual chastity and poverty, was divided into two classes, monks and friars. The chief point of distinction between them was, that the monks were forbidden the possession of private property, and whatever they held they held in common, whilst the friars renounced all property, whether as individuals or as a community. Each of these classes was again subdivided into various orders and fraternities. Chaucer's monk belongs to the order of the Benedictines, which derived its name from St. Benedict, who was born in Italy about the year 480; and who at the tender age of fourteen hid himself in a cavern in a desert for a considerable time, where he was supplied with provisions through the care of a friend, who had to descend with them by a rope. The fame of the ascetic soon spread, as people flocked to him from all quarters. About 528 he removed to Mount Cassino, where, having converted the inhabitants from paganism, and overthrown the statue of Apollo, he founded the order bearing his name, which quickly spread all over Europe. It was introduced into England by St. Augustine and his brethren in 596, when they came to convert the Anglo-Saxons to the Christian religion. So rapidly did the order progress here in public estimation, that its revenues in the course of time exceeded the revenues of all the other monastic orders put together. All the abbeys in England prior to the Norman conquest were filled with its votaries; and down to the Reformation all the mitred and parliamentary abbots, excepting the prior of the Knights of St. John of Jerusalem, were Benedictines.

The duties of a monk may be thus briefly summed up:—to pray, groan, and weep for his faults; to watch, and abstain from sensual pleasures; to labour with his hands; to throw off the cares of the world, and attend solely to their celestial interests: to keep within the cloister, and perform all the routine of his appointed duties with faithfulness and regularity. If he aspired to the government of his fellow-monks, it appears that besides a stricter observance of the rules of "St. Maur and St. Beneit" (Benedict), various accomplishments were expected to be superadded. Some time in the thirteenth century, the prior and convent of St. Swithin's at Winchester, in recommending one of their brethren to the convent of Hyde as a proper person to fill the abbacy then vacant, include among his other and more spiritual qualifications his knowledge of glossing, writing, illuminating, and chanting. Such then was, according to theory, the very man Chaucer had to describe. A very different picture, however, awaits us in the poet's verses, and one, for the time of their composition, infinitely more true:

> "A monk there was, a fair for the mast'ry*;
> An out-rider that lovéd venerie†;

* *A fair for the mast'ry*, i.e. one well fitted for the management of the community to which he belongs. † Hunting.

A manly man, to be an abbot able.
Full many a dainty horse had he in stable;
And when he rode, men might his bridle hear
Gingéling in a whistling wind as clear
And eke as loud as doth the chapel bell,
There, as* this lord was keeper of the cell.
The rule of St. Maur and of St. Beneit†,
Because that it was old, and somdele strait,
This ilké monk let oldé thingés pace;
And held after the newé world the trace."

As to the text

"That saith that hunters be not holy men;
Ne that a monk when he is rekkéless‡
Is like to a fish that is waterless;
This is to say, a monk out of his cloister:—
This ilke text held he not worth an oyster.
And I say his opinion was good:
What should he study, and make himselven wood
Upon a book in cloister, alway to pare?
Or swinken§ with h's handés, and laboúr,
As Austin bit||? How shall the world be serv'd?
Let Austin have his swink to him reserv'd.
Therefore he was a prickasoure ¶ a right:
Greyhounds he had as swift as fowl** of flight:
Of pricking, and of hunting for the hare
Was all his lust ††; for no cost would he spare."

The love of hunting, which Chaucer has here described as so conspicuous a feature of his Monk's character, receives numerous illustrations from the history of the religious houses of England. Thus we find that the Archdeacon of Richmond, on his initiation to the priory of Bridlington, in Yorkshire, in 1216, came attended by ninety-seven horses, twenty-one dogs, and three hawks. In 1256, Walter de Suffield, Bishop of Norwich, bequeathed by will his pack of hounds to the king; whilst the abbot of Tavistock, who had also a pack, was commanded by his bishop, in 1348, to break it up. A famous hunter, contemporary with Chaucer, was William de Clowne, abbot of Leicester, who died in 1377. His reputation for skill in the sport of hare-hunting was so great, that the king himself, his son Edward, and noblemen paid him an annual pension to hunt with him.

The cell of which this Monk was "keeper" was most probably one of those offshoots from the parent houses, which, though subordinate to the latter, had their own officers and domestic management, and were sometimes very wealthy; occasionally indeed, they grew into so much importance as to achieve independence, and obtain the rank of a convent or priory. It is thus only that we can explain the fact of Chaucer's Monk being able to have "many a dainty horse in stable," or to dress in the style that he does. No mere monk would have been allowed to keep to himself the requisite wealth, and the "keeper" or "lord" of an insignificant cell would not have had it to keep. In the Sutherland manuscript the passage concerning the Monk's bridle

"Gingéling in a whistling wind as clear
And eke as loud as doth the chapel bell,"

is illustrated by golden bells on the bridle and trappings on the horse. The custom is supposed to have been borrowed from the knights, among whom it was made a matter of importance to have their bridles well hung with bells, and the neglecting to do so was looked upon as a mark of meanness or poverty. Arnaud of Marsan, an old troubadour, gives a reason for its observance:—"Nothing is more proper to inspire confidence in a knight and terror in an enemy." Wickliffe, the contemporary, and, perhaps, friend of Chaucer, has a passage happily illustrative of the truth of Chaucer's description. In his 'Trialogue' he inveighs against the priests for their "fair horses, and jolly gay saddles and bridles ringing by the way." The remainder of Chaucer's description is as follows:—

"I saw his sleeves purfled at the hand
With gris*, and that the finest of the land.
And for to fasten his hood under his chin
He had of gold ywrought a curious pin;
A love-knot in the greater end there was.
His head was bald, and shone as any glass,
And eke his face as it had been anoint.
He was a lord full fat and in good point.
His eyen steep and rolling in his head,
That steamed as a furnace of a lead.
His bootes supple, his horse of great estate,
Now certainly he was a fair prelate.
He was not pale as a forpined† ghost.
A fat swan loved he best of any roast.
His palfrey was as brown as is a berry."

We have already referred to the golden bells in the pictured representation of the Monk in the Sutherland manuscript; in other respects also that representation agrees minutely with the text, and sometimes illustrates it. The habit of the Benedictines was a black loose coat or gown of stuff, reaching down to their feet, with a cowl or hood of the same, and under that another habit, white, as large as the former, made of flannel, with boots on their legs. In the manuscript, accordingly, we have the black gown, with full sleeves, and a glimpse of the supple boots beneath. The monk has by his side two hounds, with blue collars and gilded buckles. The poet has remarked that the sleeves of the Monk's tunic are edged with fur, "the finest of the land," and doubtless as expensive as it was beautiful. One of Wolsey's ordinances for the reformation of the Benedictines, in 1519, was especially directed against this particular feature of monkish foppery.

* Or, in other words,—there, where this lord, &c.

† Benedict.

‡ Mr. Tyrrwhitt thinks Chaucer wrote *reghelles*, a Saxon compound signifying without rule, "as the known sense of rekkeles, viz. careless, negligent, by no means suits with this passage." With due respect to so high an authority, we cannot but observe that it seems to us the passage as it stands conveys the very sense the critic desires it should convey; what is a reckless man, but one whom the ordinary rules of conduct have ceased to bind?

§ Toil, drudge. || Biddeth. ¶ A hard rider.

** Birds. †† Pleasure, delight.

* Fur. † Wasted away.

THE DEATH OF PLANTS.

The same volume of Brande's 'Journal' we recently quoted, as containing an interesting article upon the Dissemination of Plants, from the pen of M. Mirbel, also contains a paper upon their death, by the same eminent botanist. We present an abstract of it:—

Plants, as well as animals, unless destroyed by casualties or disease, are doomed to die of old age. Several of the *Mucores* (Moulds), *Byssi*, and *Mushrooms* perish in a few days or even hours. The *herbaceous* plants called annuals die within the year, and this almost independently of climate: the propagation of the species having been secured by the ripening of the seed. In the biennials the flower-stem is not evolved and seed produced until the second year, after which the plant perishes. In the perennials the parts exposed to view perish annually in like manner; but the root surviving, new stems arise from it every spring. In most *woody* plants death does not occur until fructification has recurred for a greater or less number of years; some of the monocotyledona, however, as the sago-tree, and the umbrella-tree (*corypha umbraculifera*), with immense fan-formed leaves of eight or ten yards in length, only bear fruit once, and then die.

If the herbaceous perennials and woody plants were viewed as simple individuals, they would almost seem

as not liable to death from old age; but in these plants we must distinguish between the new part, which lives and grows, and the old, which has ceased to do so, and is therefore dead. When these plants propagate their race by seeds, the seed must be considered as an embryo plant, a new and different individual, independent and unconnected with that from which it derived its existence; but when they are propagated by a continuous evolution of like parts, these are as a series of individuals, which issue from the surface, the one of the other, in an uninterrupted sequence, continuing, however, in some instances permanently united. But in neither of these cases are the *individuals* perpetuated, although their succession or *race* becomes so.

All the parts of the young herbaceous annual are susceptible of enlargement; the cells of the tubes, at first very small, are soon extended in every way. In process of time the membranous walls, fortified by the absorption of nutritious juices, grow thicker, and lose by degrees their original pliancy. The membranes once hardened, excitement ceases to be produced, and the vital functions are at an end; nourishment is no longer drawn, growth is at a stand, and the plant, unable to resist the ceaseless attacks of the external agents employed by nature for its destruction, decays in a short time.

For the same reasons the stems of herbaceous perennials decay, but in these the root is regenerated by a succession of evolutions. So too in the shrubs and trees, the liber, or inner bark, represents the herbaceous plant, and, like it, has only a short existence as such. For when vegetation revives in the woody part of a plant, on the return of spring, it is because a new liber has replaced, under the bark, the liber of the preceding year, which has hardened and become wood. This explanation will equally apply to the meanest shrub and to the giants of the vegetable world, such as the cedars of Lebanon, nine yards in girth, from the measurements of Labillardière; the stupendous chesnuts of Mount Etna, one of which Howell states measured seventeen yards in circumference; and the Baobab of Senegal, ten or twelve yards in girth, and, according to the computation of Adanson, five or six thousand years old; in all of these vegetation is maintained by the annual production of the thin layer of liber at the inner surface of the bark. The concentric layers of preceding libers constitute the mass of the wood, serving merely to support the newly-formed parts, and to conduct to them their nutritious juices. Nay, for the performance of these offices this wood need not always be entire, for willows and chesnuts, even when quite hollow, will continue to grow with vigour; but in their soundest state the removal of the bark is their destruction.

Thus, as the old parts of the roots of the herbaceous perennial continue constantly to die away under ground, and are succeeded by new ones, and the concentric layers which constitute the wood or heart of the trunks of trees are no other than the accumulated remains of bygone generations, in which vegetation and life are entirely extinct, we find that the immortality imparted to this form of existence is only apparent, and that the individuals endowed with it perish in due course, as all other forms of organized bodies.

As the age of the tree in nowise diminishes the vigour of the liber, and as a sound well-grown scion from an aged but healthy tree affords as good a cutting for propagation as that taken from a younger; so, we may infer, that according to the coarse of nature, the progress of regeneration by continuous evolution would never be arrested, if the overgrown size of the branches and stem, the hardening of the wood, and the obstruction of the channels which permeate it, did not impede the circulation of the sap, and consequently its access to the liber.

The life of trees has been commonly divided into three stages—infancy, maturity, and old age. In the first the tree increases in strength from one day to the other; in the second it maintains itself without sensible gain or loss; in the third it declines. These stages vary in every species according to soil, climate, aspect, and the nature of the individual plant. The common oak usually lasts from six to nine hundred years, and the stages of its existence are of about two or three hundred years each. It, as well as the chesnut, has been observed to live longer upon a dry than a wet soil.

Every species, to attain its due growth, requires a certain temperature to be found within limits of a greater or less extent. The oak, the fir, the birch, &c. thrive most towards the north; the ash, the olive-tree, &c., in the warmest parts of Europe; the baobab, the ceiba, and the palm flourish only between the tropics. Sir Humphry Davy considered that the different quantities of carbon furnished by the various woods would afford a tolerably accurate measure of their respective longevities; those in which earthy and carbonaceous substances prevailed being the most enduring, and those in which gaseous elements proportionally abounded, the least so. However well this rule may apply to the indigenous trees of Europe, it is not probable that many of the tropical trees of great longevity (as the baobab, &c.), but of loose and soft texture, would yield the same proportion of carbon as our oaks, elms, &c., whose existence is comparatively brief. The same distinguished writer also believed that trees of the same species grow to a more advanced period in the north than in the south; but in truth every tree lives the longest when it is in that climate which is best adapted to its nature; and thus, although more oaks and firs are found of a great age in the north than in the south of Europe, yet, on the other hand, the ashes of Calabria and Sicily are more long lived than those of Great Britain and Prussia.

In proportion as a tree increases in size, the vessels of its ligneous layers become obstructed, and the sap circulates with less freedom; hence, absorption and secretion decrease after youth, in proportion as the bulk of the tree is enlarged; the liber is less vigourous; the buds and roots become fewer and feebler; the branches wither; the stem decays at the head; water settles in the injured parts; the wood moulders away. Ere long, the annual liber loses the power of completing its regeneration; new parts are no longer evolved, and the tree perishes. The tree after death is overrun by various cryptogamous plants; it attracts and imbibes moisture no longer, as formerly, by the absorbing powers of its organs, but by the hygrometrical property it derives from its porosity, and the chemical action of the elements which compose it; the oxygen of the atmosphere consumes a part of its substance; water is generated and carbonic acid disengaged; the rest is resolved into vegetable mould (humus), a fat brown powdery substance, eminently fertile, in which we find in different proportions the same elements as those of which vegetables are composed, and which have the faculty of decomposing air and combining with its oxygen.

It is thus the career of plants is terminated in the order of things. The earth they adorned in the period of vegetation is fertilized by their remains: germs impregnated with new life have already been confided to its bosom, ready to supply the bygone generations, and, through the death of individuals, an unfading youth is secured to the race.

REAPING.

REAPING (or cutting the corn when it is ripe) is one of the most important operations of harvest. It requires many hands to accomplish it in proper time, so that the corn which is ready for the sickle may not be too ripe and shed, nor the fair weather be allowed to pass before all the corn is secured in barns or stacks. The labourers who are required all the year for the common purposes of husbandry seldom suffice for the harvest, especially on extensive farms, and recourse is usually had to the assistance of mechanics and artisans from the neighbouring towns and villages where the population is considerable, or labourers are induced by good wages to come from a distance.

The common reaping-hook, or sickle, with which the corn is usually cut, is one of the oldest instruments of husbandry; and the goddess Ceres was generally represented by the ancients with a sheaf of corn and a sickle in her hand. In reaping with the sickle, a portion of the stems is collected with the left hand, and held fast; while the sickle in the right hand is inserted below the left, taking the stems in its semicircular blade, and cutting them through by drawing the sickle so as to act as a saw, for which purpose the edge is finely serrated in a direction from the point to the handle. The heads of the corn, with the upper part of the straw, are then laid on the ground in quantities which may readily be collected into a sheaf. Practice soon gives dexterity to the reaper; and he finds it more expeditious to cut small quantities in succession until he has filled his hand, than to attempt to cut through a large handful at once. Severe wounds are often inflicted on the fingers of the left hand by beginners, even to the loss of a finger; but this soon makes them cautious and expert. The division of labour is introduced with advantage amongst a band of reapers. A certain number cut the corn, while others follow to gather the sheaves; some only preparing the bands, and others tying them and setting up the sheaves into stooks or shocks, which usually consist of ten or twelve sheaves. The smaller the sheaves are, the less injury the corn sustains in a wet harvest, as the moisture in a thick sheaf does not so readily evaporate. Hence it is the interest of the farmer to see that the reapers do not make the sheaves too large. In many places there is a regular measure for the circumference of a sheaf, which should never exceed thirty inches. The bands are made by taking two small handfuls of the cut corn, and crossing them just below the ears into a knot. The sheaf is then pressed with the knee, and the band drawn tightly around it. The ends are twisted together like a rope, and inserted under the band, which effectually fastens it. The sheaves should be so tied that there may be no danger of their falling loose when pitched into the cart or stacked, without being so tight as to prevent the moisture in the straw from evaporating. They should not be tied too near the ears, but rather nearer to the butt. The sheaves, when tied, are placed two and two on the butt-ends, with the ears leaning against each other: sometimes they are placed in a circle, all the ears being together, and the butts slanting outwards: a sheaf is then opened, by inserting the hand into the middle of the ears, and reversed over the tops of the preceding, forming a cone, and covering all the other ears, while it hangs down around them. In this position they will bear much rain without injury.

Wherever the sickle is used for reaping, the straw is cut at a certain height from the ground, and the remainder forms a long stubble, which is usually mown at leisure after harvest, and carried into the yard for litter; but in the neighbourhood of large towns, where straw is sold at a good price, or exchanged for stable dung, it is important that as much as possible of it should be cut with the corn. This has introduced the practice called fagging, and sometimes bagging, the origin of which provincial expressions is not well known. The instrument used for this purpose partakes of the nature of a scythe, as well as of a reaping-hook. It is shaped like a sickle, but is much larger and broader; and instead of being indented like a saw, it has a sharp edge like a scythe, which is renewed when blunt by means of a stone or bat. The fagging-hook cuts the straw close to the ground by a stroke of the hand; and its curved form is only useful in collecting stray stems, and holding a certain quantity of them between it and the left hand of the reaper when he makes up a sheaf. A certain quantity is cut towards the standing corn, the left hand pressing it down at the same time. When as much is thus cut as would make half a small sheaf, the reaper comes backwards, cutting in a direction at right angles to the first, and rolling together the two parts, which he carries in the bend of his hook and places on the band which has been prepared for him. A full-sized sheaf is usually composed of two cuttings. Two men will fully employ a third to make bands for them, tie up the sheaves, and set them up. This method of reaping is laborious, on account of the stooping required to cut near the ground. The Hainault scythe, which has been described in most agricultural works, does the work better, and with less fatigue. It is in fact a fagging-hook, not quite so curved, of which the handle is longer, and placed at an angle with the plane of the blade. It requires some practice to give the proper swing to it by a peculiar motion of the wrist; but when this is once acquired, a considerable saving of labour and time is effected. Many attempts have been made to bring it into use in England; but, from the obstinacy of the labourers, or the want of perseverance in the masters, without much success. A better instrument, however, on extensive farms is the cradle-scythe, which, in the hands of an expert mower, will do more work and more effectually secure all the straw than any other instrument.

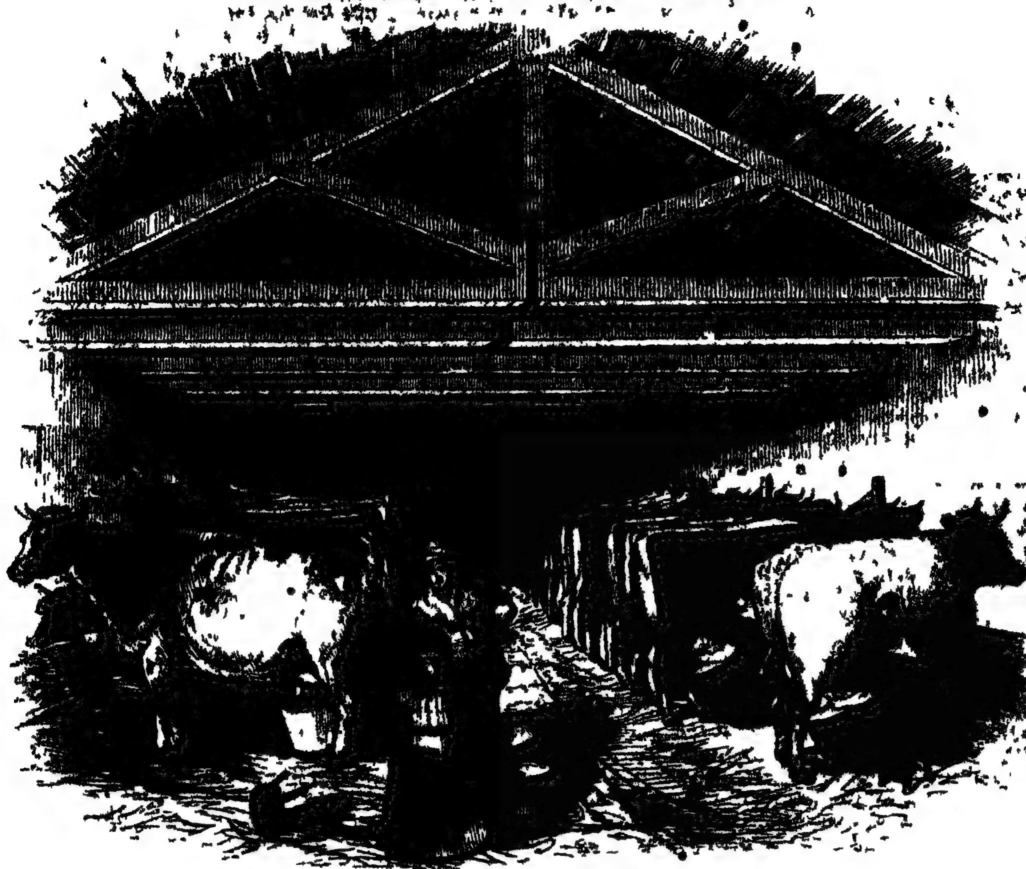
When the saving of time is considered, as well as expense, there seems to be no doubt than on an extensive farm the scythe is far preferable to the sickle for cutting every kind of grain. Barley and oats are usually mown, and carried without tying them into sheaves, but this is a slovenly and wasteful practice: by means of the cradle-scythe they may be mown so regularly as to be readily tied into sheaves; and the additional expense will be fully compensated by the saving of all the corn which, being on the outside of the stack, is lost by the depredations of small birds.

Beans are usually reaped by the sickle, the stems being too strong and too wide apart to admit of the scythe. Where it can be done conveniently, without the soil adhering too much to the roots, it is better to pull them up, and tie them in bundles with straw bands, or tar-twine, which will be found both a convenient and economical method.

Peas are generally reaped by means of two large hooks similar to the fagging-hooks, one of which is held in each hand; and the stems, which are generally much interwoven, are partly cut and partly torn from the roots, and so rolled up into a small bundle laid loose in order that it may dry. Tares are reaped in the same way.

There have been many attempts to introduce machinery for reaping corn. Some of the inventions were ingenious and promised well, but none, when put to the test, answered the expectations formed. The various inclinations of the straws prevent any regular mode of cutting. Till some better invention appears, the scythe will probably be found the cheapest and most expeditious instrument for reaping the corn.

A DAY AT A LONDON DAIRY.



[Milking Shed, 12 o'clock.]

A DAY at a London dairy is a very early day. It begins when nearly all the world is fast asleep, and ends when the fashionable world has not long risen. It is a day which reminds us of the "good old times" of Queen Bess, when a breakfast of beef and ale was taken at five or six o'clock in the morning, and when a large portion of the day's labour was completed before noon. We do not, in this mention of dairies, allude to the shops or shop-kitchens of the humble dealers by whom so large a proportion of the London families are supplied with their daily pennyworths of milk (although these places are open betimes in the morning), but to the establishments of those large proprietors of milch cows by whom the retail dealers are in many cases supplied. It is not improbable that many persons living in the heart of the metropolis, and who scarcely see a cow from year's end to year's end, may be ignorant of the existence of such places; entertaining the opinion that each retail dealer draws his "new milk from the cow" in his own shed a few hours before the world's breakfast-time. Many do so, no doubt; but there are also many who cannot boast of possessing a cow, and whose dairy [illegible] consist in buying milk to sell again [illegible] small quantities. Let us see whether a [illegible] may not [illegible] in studying the commercial [illegible] by which large towns are supplied with milk.

We shall have to [illegible] the reader [illegible] at two o'clock in the morning, and [illegible] to accompany us to Islington, a very land of cows, from which more parts of London are supplied with [illegible] is generally imagined. Proceeding northward from the well-known 'Angel,' we come to a division of roads at Islington-green: the eastern branch, called Lower Islington, leading to Stoke Newington, Dalston, and other villages; and the western, known as Upper Islington, leading to Holloway and Highgate. Following this last-mentioned road, we pass Islington church; and a little before we arrive at Highbury, an inscription on a gateway at the left points [illegible] "Laycock's Dairy and Cattle Layers." Through this gateway (supposing the permission of the proprietor to have been obtained) we enter, and soon find ourselves surrounded by buildings spread over a wide extent of ground, and consisting principally of [illegible] barns, and granaries, but comprising also many [illegible] devoted to various purposes. At present we [illegible] pay any particular attention to the other [illegible] area, but will direct our notice to a [illegible] cow-sheds or milking-sheds, at the right [illegible] avenue leading from the entrance. [illegible] one building we here find six ranges of [illegible] parallel one with the other, and running [illegible] and south. Along both sides of every [illegible] each stall adapted for the [illegible] and the whole so arranged as to [illegible] the sixty-four cows in each shed.

As three o'clock approaches, a scene of bustle presents itself. Milk-maids, whose scarcely intelligible language indicates Wales to be their native country,

and whose ruddy faces give evidence of the healthiness of their employment, arrive at the dairy, bring their pails and stools to the milking-sheds, and make preparations for milking the cows. Perhaps we ought to say milk-*women*, for there are doubtless wives as well as maidens among them; but we do not like to dispense with an appellation which has become almost classical among pastoral writers: milk-maids, then, let them be. Each of these milk-maids has a handkerchief bound round her head, somewhat in the fashion of the French singing-women occasionally seen in the London streets. Each one places her wooden pail—so neat and white and clean, that one almost doubts whether it ever *could* be dirty—beneath the cow, sits on her stool, rests her head against the side of the animal, and milks until the pail be full, or until the cow has yielded her morning's supply. The cows being ranged in tolerably regular order, and a considerable number being milked at one time, the whole presents a scene by no means unpicturesque. The number of milk-maids bears some convenient proportion to the number of cows; so that all the latter, four or five hundred in number, may be milked in the course of about an hour, or an hour and a half. Each milk-maid draws the milk from several cows; but the mode of proceeding is the same in all; the animal is fastened to the stall, and remains quiet during the process of milking.

Of the very large quantity of milk which is thus obtained within a little more than an hour, by far the larger proportion leaves the dairy immediately. In some instances women, provided with a wooden yoke, carry away the milk in pails, while in other instances the milk is put into tall metallic vessels, and carried away in carts. The persons to whom the milk is thus sent are the retail dealers, to whom we before alluded; and who, not possessing the means or the convenience for keeping cows, purchase their milk at these large establishments, and retail it at a profit which affords them the means of subsistence. On the nature of the transactions between the two parties we shall make a few observations hereafter.

Immediately after the milking is concluded, the sheds are cleaned with great care; and the cows are treated, with respect to food, &c., in various ways, depending on the season of the year.

The bustle of the dairy now in great measure subsides. The retail dealers, having obtained their supply of milk at this early hour, are enabled to convey it from door to door time enough for the breakfast-hour of their customers. Twelve o'clock at noon is the time when they go for their supply of milk for the afternoon; and the interval leaves us a convenient opportunity for a little gossip about dairy statistics generally; the details of which are by no means uninteresting. Leaving the London families, then, to breakfast on the milk thus obtained, we will spend the forenoon in a tour among the country dairies.

In two recent papers we have entered into a few details of the history and zoological features of the various breeds of British cattle; from which it will be seen that they are divided, for convenience, into classes distinguished by their horns. Thus there are the long-horns, the middle-horns, the short-horns, the Alderney or crumpled horns, and the polled or hornless. This classification is very artificial, but is nevertheless found useful, and may pave the way for a better, as the Linnæan system in Botany did for that of Jussieu. The details given in the two papers just alluded to may fittingly be followed by others relating—not to cattle generally—but to the milking qualities of cows belonging to different breeds, and to the dairy system in different places. Our chief authority will be Mr. Youatt, who, in collecting materials for his valuable treatise on Cattle, traversed nearly every part of the three kingdoms.

The middle-horns are the prevailing cows in Devonshire, Hereford, Sussex, and some other counties, as well as in Wales and Scotland; as a general rule they are deemed tolerable, but not extraordinary milkers. In Devonshire, the cows are not reared so much for their dairy produce as in many other counties; but the celebrated Devonshire or "clouted" cream affords an instance of the rich quality of the milk. It may be interesting here to describe the mode in which this cream is obtained, as given in the 'Agricultural Survey.' The milk, while warm from the cow, is strained into shallow tinned-brass pans, or earthen ones, in which a little water has been previously placed to prevent the scorching of the milk. After the milk has stood several hours, the pans are placed over a clear slow fire; a charcoal fire or a stove being deemed preferable to a turf or a wood fire, as less likely to give a smoky taste to the cream. The heat should be so managed as not to suffer the milk to boil, or, as they provincially term it, to 'heave,' as that would injure the cream; and the test by which the proper heat is ascertained is a curious one:—The pan, having its bottom much smaller than the top, throws up, as it were, the form of its bottom on the surface of the cream, or gives a particular appearance to a portion of the surface equal in size and shape to the bottom of the pan. If the pan be nearly as large at the bottom as at the top, this criterion is not so easily obtained. In summer, it must be observed, the process of scalding ought to be quicker than in the winter, as it would be apt to curdle in very hot weather if kept over too slow a fire. The scalding being finished, the pans are carefully returned to the dairy, and, if in summer, cooled as quickly as possible; but if in winter, cooled slowly. The cream which collects on the surface is allowed to remain one or two days, according to the season, and is then taken off, and put into wooden bowls, which are first rinsed in scalding water and then in cold. It is now briskly stirred round one way, with a nicely cleaned hand, which must also have been washed in hot and cold water, both for the sake of cleanliness and to prevent the adhesion of the cream. The cream, being thus agitated, quickly assumes the consistence of butter; the milky part readily separates, and being poured off, the remainder is washed and pressed in successive portions of cold water, and a little salt is added to it. The cream is then well beaten in a wooden trencher, until the milky and watery parts are separated; and it is finally put into a convenient form for the market. In this latter state, it has in fact assumed the form of butter; but the cream is often eaten with strawberries, with tarts, &c., in the state in which it is taken off the scalding-pans twenty-four hours after the scalding. So much of the cream is obtained in this process, that the remaining milk is exceedingly poor and tasteless.

The Hereford breed, though valuable in many respects, is far less esteemed as milch cows than the Devons; nor does the Sussex cow answer well for the dairy, almost every other breed being preferred to it.

In the Hebrides, half a century ago, the cows were, during the winter, housed by the small farmer in the same room which formed the home of his family. The family had their beds of straw or heath in the niches of the walls; while the litter was never removed from the cows, but fresh layers of straw were occasionally laid down; and thus the floor rose with the accumulation of litter until the season for spreading it upon the land, when it was at length taken away. Great improvements, however, have been made since this state of things; and the cows in the Hebrides are now sup-

plied with food in a manner more convenient and more profitable to the owners. In most of these islands the dairy is looked upon as of less moment than the rearing of calves; the farmer rarely keeping more milch cows than will furnish his own family with milk, butter, and cheese. In some of the islands, however, such as North Uist and Tiree, where the herbage is good, the dairy is more attended to. The cows are driven as quietly and slowly as possible to the fold, from a regard both to the quality of the milk and to the wild character of the animals. They are carefully drained to the last drop, not only on account of the superior richness of the latter portion of the milk, but because the retention of any part is apt to produce or to hasten the drying-up of their milk, a defect to which these cows are said to be very liable. The milk is carried to the house with as little disturbance as practicable, and put into vessels not more than two or three inches in depth. The cream is supposed to rise more rapidly in these shallow vessels; and it is removed in the course of eighteen hours.

In the outer Hebrides, separated from the inner range by the channel called the Minch, the dairy husbandry has undergone very little change, the attention of the farmer being chiefly directed to breeding.

Passing over Inverness, the Shetlands, and Orkneys, as presenting no particular features, we come to Caithness, where, after many attempts to rear milch cows of the Highland breed, it has been found that they will not yield a remunerating dairy-produce to the farmer; and the Ayrshire cows, of which we shall presently speak, are now kept there. The dairy is often managed in the following manner:—The farmer provides cattle and pasturage, but he has nothing to do with the manufacture of the produce. He bargains with some dairywoman to deliver to him annually a calf for every two cows, and forty or fifty pounds of butter, with an equal quantity of cheese for each cow. It is, however, now found more satisfactory and more profitable for the farmer to take upon himself the management of his own dairy produce.

In the district of Buchan, in Aberdeenshire, the cows, on account of the excellent quality of the pasturage yield a large quantity of milk, rich in cream; the quantity yielded being from three to four, and even sometimes as high as seven gallons per day. They are fed principally with oat-straw in the winter; but they sometimes get plotted hay, or hay on which boiling water has been poured. The county of Fife contains a breed of cattle by no means unprofitable for the dairy; a good cow generally giving from five to seven gallons of milk per day for some months after the birth of a calf. This breed appears to be a mixture of the Highland with an English breed; and much discussion has arisen as to the time when this was effected; some writers supposing that James I., on coming to the English throne, sent some valuable cattle to his Fifeshire subjects; while others say that when Margaret, daughter of Henry VII. of England, became the bride of James IV. of Scotland, she brought with her the simple but valuable dowry of three hundred English cows, which were sent into Fifeshire.

In Dumbartonshire the milch cows are fed in winter on straw with turnips or potatoes, and are set loose once in the day for water and exercise. During the summer months the milch cow is in the field during the night, but sheltered from the flies, and supplied with green fodder in the cow-house during the day; and when the flies cease to torment, and the nights become cold, they are housed during the night, and graze at liberty in the day. The calves for the dairy are generally taken from their dams as soon as born, and fed with milk from the hand for about two months, the quantity of milk being gradually decreased when they begin to take other food; linseed-tea, and bean or peas flour, are occasionally mingled with other food. After the calves are weaned, they are turned on good pasture, and during the first winter are housed and fed on oat-straw or meadow-hay mixed with turnips.

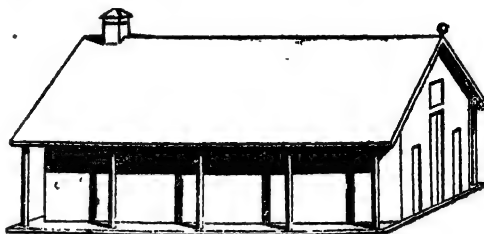
Ayrshire is noted for the excellent milking qualities of its cows. Five gallons of milk daily, for two or three months after the birth of a calf; three gallons daily for the next three months; and one gallon and a half daily during the next four months, is said to be the average produce of an Ayrshire cow in her native district. This milk is employed in four different ways, according to the situation of the farm with respect to populous towns, namely, in supplying dairies with new milk, in fattening calves, in making butter and cheese. It is the practice in many parts of Ayrshire to let the cows to a professed milkman at so much per cow per annum; which is provincially called a *bowing*, or *boyening*, from *boyen*, a milk-pail. The farmer provides the cows and requisite dairy vessels, the whole summer pasture and winter foddering, houses and litter for the cows, and a habitation for the milkman; while the boyener takes the whole charge of the milking, and the management and disposal of the butter, milk, cheese, or whey, as he chooses. The boyener pays a money-rent for the use of the cow, utensils, &c., and gets a small profit by selling the produce. Mr. Aiton, a well-known writer on dairy husbandry, gives an account of the general mode of managing the Ayrshire cows in large farms, as exemplified in the farm of Mr. Ralston:—"He keeps sixty milch cows at Kirkum, and nearly the same number at another farm a few miles distant; besides, he rears on one or two other farms thirty or forty young cows to keep up the stock and for sale. His cows are of the Ayrshire breed in its greatest perfection, and so well managed, that every milch cow on his farms yields him her own weight of the best cheese to be met with in Scotland, and for which he draws the value of the cow annually. Mr. Ralston keeps his cows constantly in the byre till the grass has risen so as to afford them a full bite. Many put them out every good day through the winter and spring, but they poach the ground with their feet, and nip up the young grass as it begins to spring, which, as they have not a full meal, injures the cattle. Whenever the weather becomes dry and hot, he feeds his cows on cut grass in the byre from six o'clock in the morning to six at night, and turns them out to pasture the other twelve hours. When rain comes, the house feeding is discontinued. Whenever the pasture-grass begins to fail in harvest, the cows receive a supply of the second growth of clover, and afterwards of turnips strewed over the pasture-ground. When the weather becomes stormy in the months of October or November, the cows are kept in the byre during the night, and in a short time after, during both night and day; they are then fed on oat-straw and turnips, and continue to yield a considerable quantity of milk for some time. Part of the turnip crop is eaten up in the end of harvest and beginning of winter, to protract the milk, and part of it is stored up for green food during the winter. After this is exhausted, the Swedish turnip and potatoes are used along with dry fodder, till the grass can support the cows." We have given this account at full, because it explains the mode of feeding the cows on large farms in the finest dairy district of Scotland.

Lanarkshire or Clydesdale is well calculated for a dairy district, and the Ayrshire cows are here kept in high perfection. There is (or was, a few years ago) at Glasgow, in this county, an extensive dairy, whose history is very remarkable. A Mr. Harley, who had been long engaged in the cotton manufacture, happening to

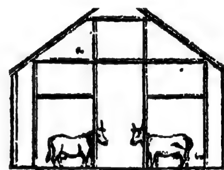
discover in a field, which he had purchased near Glasgow, a copious spring of excellent water, he not only converted that spring to public use, by supplying the city better than it had been before, but he erected cold and hot baths. Some of the bathers having expressed a wish to be provided with warm milk after bathing, Mr. Harley procured a cow for that purpose; and as the baths soon became a place of general resort, he not only increased the number of the cows, so as to supply the demand, but perceiving that the city of Glasgow was ill supplied with milk, and that much of that which was sold there was of bad quality, he began at first to supply his friends, and afterwards the city, with milk perfectly pure. The stock of cows gradually increased to above a hundred. The milk was drawn into pails, and then passed through a hair sieve into large cans, in which it was carried to Glasgow. The cans were fixed on carts, each drawn by a pony. A given quantity of milk was put under the charge of the driver, for which he was accountable; and so tenacious was Mr. Harley of supplying the citizens with milk pure and unadulterated, that every can, after the milk was introduced into it, was locked up so close that no air could be admitted to it, except as much as would let the milk run at the cock below; and the air-hole was so constructed that it was not in the power of the driver to introduce water or any other liquid into it. Mr. Aiton has given a very minute account of the daily economy of this establishment, the Willowbank dairy; but we believe that it is now discontinued, and we shall not therefore enter into these details.

Nearly all the cows to which the preceding details relate belong to the breed of 'middle-horns;' and there are other counties, both in England and Scotland, where this breed similarly prevails; but they do not present any features in connection with our present object which need detain us. The same may be said of the 'long-horns' and of the 'Alderneys;' for the former, though fattened for the market, and yielding a large supply of butter and cheese, are not kept to any great extent in 'lactaries,' or milk establishments; while the latter, though deemed, from their diminutive size, ornamental to a gentleman's park, and though yielding milk of a very rich quality, give a quantity so small in proportion to the food which they eat, that their retention in a dairy is somewhat unprofitable. We will therefore dismiss them, and speak of the 'short-horns,' the breed with which the great metropolitan dairies are principally supplied. Referring to the two papers recently published, for a few details respecting the origin and growth of the short-horns, we will here briefly remark, that although there may be other cows which yield a larger or a richer supply of milk, yet, as a matter of commercial enterprise, the short-horns seem now to be favourites at these large establishments, because, after having furnished a moderately good supply of milk for a certain period, they are speedily fattened for the butcher and sent to Smithfield.

We may here borrow from the article 'Dairy,' in the 'Penny Cyclopædia,' a brief notice of the general character of the Dutch dairies, which are remarkable for their neat and clean arrangement. The cow-house and dairy are combined in a building about sixty feet long by thirty wide, with a verandah running round three sides of it. The dairy-room is sunk below the level of the soil, and is paved with brick. The sides are covered with Dutch tiles, and the arched roof with hard cement. The cow-house has a broad passage in the middle, and the cows stand with their heads towards this passage, which is paved with clinkers or bricks set on edge. Their tails are towards the wall, along which runs a broad gutter, sunk six or eight inches below the level of the place on which the cows stand. This gutter slopes towards a sink covered with an iron grate, which communicates by a broad arched drain with a vaulted tank, into which all the liquid flows. The gutter is washed clean twice a day before the cows are milked. The cows stand or lie on a sloping brick floor, and have but a small quantity of litter allowed them, which is removed every day, and carried to the dung-heap or to the pig-styes. Whenever the litter is removed, the bricks are swept clean, and in summer they are washed with water. The manner in which the cows are fastened is singular:—Two slight pillars of strong wood are placed perpendicularly, about two feet distance from each other, so that the cow can readily pass her head between them. On each of these is an iron ring, which runs freely up and down, and has a hook in its circumference; two small chains pass from the hooks to a leather strap which is buckled round the neck of the cow. Thus the cow can rise and lie down, and move forward to take her food, which is placed in a low manger before the two pillars, but she cannot strike her neighbour with her horns.



Side View of a Dutch Cow-house.



Section of the above.

We must now return from our forenoon's tour, and give a description of the metropolitan establishment which we first glanced at, the milking operations of which recommence at twelve at noon. On entering the premises, the first buildings on the left hand are a counting-house, a measuring-room, and a dairy; of the two latter of which we shall speak presently. A little beyond these, on the right, is the range of milking-sheds. Each shed is about a hundred and forty feet in length, by twenty-four in breadth, and, as before stated, is occupied by sixty-four cows. Along the middle of each shed is a drain, to carry off the water and refuse, and to keep the stalls clean. At the upper end of each stall is a trough, supplied with water from large tanks above their level, and with a receptacle for food. An upright post is placed at each of the upper corners of the stall, to which the cow is fastened by a ring connected with a chain passing round her neck. Near one end of these sheds is a square plot of ground called the 'dung-shoot,' a most valuable part of the property. The refuse and clearings of the cow-sheds are here emptied at stated times of the day, by which a store of manure is collected, the value of which is duly appreciated by agriculturists. A path has been formed by which carts may come from the open road to this spot for the removal of the manure.

From these sheds we will cross to the left of the entrance avenue, and thence pass through the other

buildings of the establishment, spread over an area of sixteen acres. There is here much appearance of a farm-yard; fowls roaming about in one part, and pigs housed in another, all being reared and fattened at a trifling expense. Of the four or five hundred cows kept in the dairy, many vary greatly in the supply of milk which they afford, according to their age, the state of their health, the season of the year, &c.; and the demand for milk on the part of customers is also slightly variable. From these circumstances it often results that the daily supply of milk may be more than equal to the demand; and the overplus, as well as the buttermilk resulting from the butter made at the dairy, is then profitably used as food for swine. The pigs, which are very numerous, are kept in well-constructed piggeries, presenting none of that dirty appearance which disfigures pig-styes in common farm-yards. Adjacent to the piggeries is a mixing-room, in which the milk destined for the pigs is mixed with such solid food as may be given to them: the mixture is effected in large wooden vessels, from which the food is conveyed to the piggeries.

Not far from the piggeries are several workshops for operations connected with the establishment. One is a wheelwright's shop, for repairing the numerous carts and vehicles employed. A second is a smith's shop, for the repair and adjustment of iron-work. A third is a shoeing-shop, for shoeing oxen employed in the team. For the better understanding the use of many parts of this establishment, it may be desirable to observe that the proprietor, Mr. Flight (Mr. Laycock has been dead several years), is a cow-farmer as well as a cow-keeper; that is, he not only keeps the cows for the sake of their milk, but grows the food on which they are in a great measure fed. He possesses two or three very extensive farms, at some distance from London, where the hay, turnips, mangel-wurzel, and other articles of cattle-food, are grown in sufficient abundance for the wants of the dairy. This extensive plan of operations is productive of much advantage, for while on the one hand the farms supply food to the dairy, the dairy supplies manure to the farms. The farm-implements, too, can be repaired at the workshops connected with the dairy; and the oxen, employed in the teams at the farms, are shod by the proprietor's own men. For these and various other reasons a constant intercourse is maintained between the dairy and the farms, one of which is at Enfield.

Near the buildings just spoken of there is a tank, for Kyanizing wood intended for palings, stakes, posts, gates, &c.; and adjacent to this is a kitchen-garden. From this point, extending to the boundary of the premises on the west, are the buildings called *cattle layers*, unconnected with the dairy or milk department of the establishment, but devoted to the reception of cattle for a few hours previous to their arrival at Smithfield market. We shall presently explain the nature of this system; but we may here state that the 'layers' are very extensive sheds, bounded by walls at the back and ends, roofed with tiles, supported by pillars, some iron and some wood, and open in front. A rack runs along the back of each shed, in which the food for the cattle is placed. Tanks of water, supplied by pipes and cocks from three or four pumps situated in different parts of the premises, are conveniently placed for affording drink for the cattle. The ground is covered with clean straw; and the cattle, during the short time that they are kept here, have a considerable space of open ground in which to roam about; gates being placed at the different openings to prevent the cattle in one layer from mingling with those in another. The number of cattle which could be contained in these layers would amount to several thousands; but nearly two thousand can be properly and conveniently received at one time.

When we turn from Upper Street, Islington, into what is called the Liverpool Road,* and proceed onward for a considerable distance, we come to the western boundary of Laycock's establishment; and within this boundary is the principal part of the cattle layers. In order to keep this part of the establishment distinct from the dairy, the cattle enter and leave the layers by a gate in the Liverpool Road, far distant from the dairy entrance in the Islington Road.

Northward of the cattle-layers is a tract of ground occupied by sheep-pens, in which five thousand sheep on their way to Smithfield may be received. Returning from thence towards the dairy entrance, we pass a plot of ground in which are four very large grain-pits. One of the most important articles of food for the cows in the large London dairies is the grains, or spent malt, resulting from the process of brewing. The proprietor of this establishment contracts with one of the great porter breweries for the purchase of the refuse grains; and these grains (brought from the brewery in waggons belonging to the cow-keeper) are deposited in large brick-built pits; or rather, a portion of the supply is thus deposited, to equalise the stock on hand, because they are procurable in greater quantity from the brewers in spring and autumn than in the other seasons. The grains are firmly trodden down in the pits, and covered with a thick layer of moist earth, to keep out the rain and frost in winter, and the heat in summer. Mr. Youatt, speaking of the general custom of the London dairies with respect to this article of food, says, "A cow consumes about a bushel of these grains daily, the cost of which is from fourpence to fivepence, exclusive of carriage and preservation. The grains are, if possible, thrown into the pit while warm and in a state of fermentation, and they soon turn sour, but they are not liked the worse by cattle on that account; and the air being perfectly excluded, the fermentation cannot run on to putrefaction. The dairymen say that the slow and slight degree of fermentation which goes on tends to the greater development of the saccharine and nutritive principle; and they will have as large a stock upon hand as they can afford, and not open the pits until they are compelled. It is not uncommon for two years to pass before a pit of grains is touched; and it is said that some have lain nine years, and been perfectly good at the expiration of that period."

Between the grain-beds and the milking-sheds are various buildings devoted to different purposes. One is a mill-room, for grinding or crushing the dry food occasionally given to the cows, such as beans, &c.; the mills and crushing-machines are worked by a horse, who tramps his never-ending circular path in a room beneath. Other buildings are employed as granaries, and as receptacles for the food eaten by the cows. When turnips or mangel-wurzel are at the proper season to be used as food, each cow will eat half a hundredweight per day, besides a bushel of grains, and a small quantity of other food, so that the quantity required for the whole dairy amounts to several tons weight per day.

Another cluster of buildings is appropriated as an hospital. Among several hundred cows it cannot but happen that some will occasionally be on the sick list; and for their accommodation about a dozen neatly constructed stalls, or boxes—we certainly must not call them sheds—are set apart. Each stall is fitted up as comfortably as possible for the invalid; and the necessary tackle is at hand for securing the animal when any operation is to be performed. A veterinary surgeon is attached to the establishment, under whom is placed not only the management of the cows in the

hospital; but the general care of the health of all those belonging to the dairy. The average value of a cow is, we believe, about twenty pounds, so that the whole constitute a property well worthy of careful supervision.

Besides the six milking-sheds before alluded to, there are two or three others, situated not far distant, and under different roofs. These are to a greater or less extent occupied, according to the number of cows in the dairy, which varies in different seasons. One large shed, more lofty than the rest, is devoted to the reception of those cows who are no longer being milked, but are under process of fattening for the Smithfield market. This is a very remarkable feature in these establishments. Instead of keeping a cow as long as milk may be drawn from her, there is a minimum of supply, below which the cow is not deemed to yield what is required of her. The cows are thus very frequently changed; they are bought for the dairy when they are in good milking condition, milked for a certain length of time, taken to the fattening-shed while still comparatively young, and sold in Smithfield at a price which renders this plan more profitable than the retention of a milch cow till she is old. Considerable diversity of system prevails in this respect, for it is not till experiments on a large scale can be made, that the most profitable management of a cow can be determined. The expense of purchasing the cow, of feeding her during her continuance in the dairy, and of fattening her for market, as well as the produce of the dairy, and of the fattened cow, all vary with the circumstances under which the cow-keeper conducts his establishment, and with the locality in which he is situated; and these diversities give rise to the different systems observed in different dairies. We shall, therefore, merely state, that when it is determined to fatten a cow for market, she is fed on grains, clover-chaff, oil-cake, and, in some instances, boiled linseed. Oil-cake is the residue obtained after expressing the oil from rape and linseed; it is, in fact, the seed after the greater portion of the oil has been removed from it, and is found to possess a remarkable fattening quality when given to cows.

It will be seen, from the above description, that the establishment embraces several different departments; but the most prominent of these is that by which families are supplied with milk. Milk is one of the few articles of consumption which is almost invariably taken to the customer, and not sent for by the customer to the seller; and the retail sellers, with their brightly polished cans, decked round the edge with a whole regiment of little cans and measures, are welcome contributors to the breakfast-table. It has been recently observed, "The cry of 'milk,' or the rattle of the milk-pail, will never cease to be heard in our streets. There can be no reservoirs of milk, no pipes through which it flows into the houses. The more extensive the great capital becomes, the more active must be the individual exertion to carry about this article of food. The old cry was, 'Any milk here?' and it was sometimes mingled with the sound of 'Fresh cheese and cream;' and it then passed into 'Milk, maids below;' and it was then shortened into 'Milk, below;' and was finally shortened into '*Mio*,' which some wag interpreted into *mi-eau* (*demi-eau*), half-water. But it must still be cried, whatever be the cry. The supply of milk to the metropolis is, perhaps, one of the most beautiful combinations of industry we have. The days are long since past when Finsbury had its pleasant groves, and Clerkenwell was a village, and there were green pastures in Holborn, and St. Pancras boasted only a little church standing in meadows, and St. Martin's was literally in the fields. Slowly but surely does the baked clay stride over the clover and the buttercup; and yet every family in London may be supplied with milk by eight o'clock every morning at their own doors."*

These itinerant milk-dealers, as was observed in the early part of this paper, are of two classes, viz. those who keep cows and retail the produce, and those who purchase milk from the large dairies such as Laycock's. In this latter mode of dealing, the purchaser agrees to give so much per gallon, and to milk the cows necessary to produce the required quantity. The milkers, therefore, whom we see at the dairy, are not, generally speaking, attached to the establishment, but are either the purchasers of the milk or are sent by the purchasers. As the cows do not always yield an equal quantity of milk, the milkers may sometimes take more and at other times less than the stipulated quantity; and, in order to adjust the quantity, each milker takes the milk which she has drawn to the 'measuring-room,' where it is measured. If the quantity be more than agreed on, a portion is emptied into a store-vessel in the measuring-room; whereas, if it be less, the requisite quantity is added from the store-vessel. A clerk and a dairy-woman are in attendance to superintend these arrangements.

The quality of the milk supplied to London families varies a good deal, according to the source from whence it is obtained. From the great dairies all the milk is sent out in a pure and rich state; for the retail dealers carry it away in their cans in the same state and nearly as warm as when it leaves the cow; while for private families in the neighbourhood of Islington, supplied directly from the dairy, the milk is sent out in cans securely locked by the clerk, so that no adulteration can be effected by the carriers. On this point Mr. Youatt observes, "The name of new milk has something very pleasant about it, but it is an article which rarely makes its appearance at the breakfast or tea-table of the citizen. That which is got from the cow at night is put by until the morning, and the cream skimmed off, and then, a little water being added, it is sold to the public as the morning's milk. The real morning's milk is also put by and skimmed, and, being warmed a little, is sold as the evening's milk. This is the practice of most or all of the little dairymen who keep their half a dozen cows; and if this were all (and with these people it is nearly all), the public must not complain; the milk may be lowered by the warm water, but the lowering system is not carried to any great extent, for there is a pride among them that their milk shall be better than that of the merchants on a yet smaller scale, who purchase the article from the great dairies; and so it generally is. The milk goes from the yard of the great dairy into the possession of the itinerant dealers perfectly pure: what is done with it afterwards, and to what degree it is lowered and sophisticated, is known only to these retail merchants."

It has been estimated that about twelve thousand cows are necessary for the supply of London and its environs with milk, and that, taking the average quantity yielded by each cow throughout the year at nine quarts per day, the total quantity is about forty million quarts per annum. Considering that this milk is usually sold by the retail dealers at four-pence per quart, after much of the cream is removed from it, that this cream is sold at three shillings per quart, and that a good deal of water is mixed with the milk by some dealers, it has been calculated that at least six-pence per quart is paid by the consumer for the real pure milk. This gives for the value of the milk consumed in the metropolis an annual sum very little short of one million sterling.

* 'London,' No. viii., 'Street Noises,' p. 137.

Since, from various causes, the daily supply of milk at the great dairies is liable to fluctuation, while at the same time it is necessary that the supply should not be lower than the demand, it follows that there is often a superfluous quantity of milk after all the dealers are supplied. To turn this milk to profitable account, a dairy or butter-room is attached to the establishment. At Laycock's, this room is near the measuring-room; it is fitted up with the various vessels and implements for making butter, all—as may be supposed—scrupulously clean. The higher classes of families in London use a great deal of cream instead of milk; and large shallow vessels are also kept in this room for forming cream from the milk. The quantity of butter made here within a given time varies with the fluctuation in the supply of milk; but a ready market is found for all of it. The butter-milk and skim-milk are profitably employed as food for swine in the piggeries; so that the whole produce is brought into requisition.

The greater part of the observations which we have made respecting Laycock's dairy may, with a little modification, be applied to another large and well-known establishment at Islington, viz., that of the Messrs. Rhodes. Here, as at the other, several hundred cows are kept, principally for the supply of retail dealers: the superfluous milk is skimmed for cream, or is made into butter; and the cows, when dry, are fattened for market. There are slight differences in the dairy management, according to the view which each proprietor may take of his own interest, such as the arrangement and fitting-up of the cow-sheds, the mode of supplying water, the degree of liberty of movement given to the cows between the hours of milking, and the general system of feeding; but the main features of the establishments bear a good deal of resemblance.

During the "joint-stock" mania, by which the world was to be supplied with almost everything through the medium of public companies, *milk* did not escape the notice of the speculators. Public companies were established both in Edinburgh and in London for the supply of milk. The "Caledonian Joint-Stock Dairy Company" built a very noble dairy or cow-house at Edinburgh. From an entrance saloon the visitor passed into the great byre or cow-house, divided by cast-iron pillars and partitions into stalls for two hundred cows. The byre was thirty feet high, and from its centre rose a large dome, for the purpose of light and ventilation. The drinking-troughs were of stone, and were supplied with water by pipes. Beneath the byre was a range of arched vaults, for the reception of the litter and refuse. This company, like most of a similar kind, failed as a commercial body; and the building was, we believe, afterwards taken by a private dairyman. The London establishments set on foot in the same manner, have similarly failed as joint-stock speculations.

With respect to the fattening of dry cows for the butcher, we may observe that other parties do this besides the farmer and the cow-keeper. Connected with one or two extensive distilleries are establishments for fattening cows and cattle generally, formed for the purpose of consuming on the spot the grains and wash of the distillery. These grains are much more nutritive to cattle than those resulting from ale or porter brewing; and the wash, a liquor remaining after the distillation of spirit from grain, is found to be conducive to the same end. Under these circumstances, the cattle are fattened almost entirely on clover-chaff, grains, and wash.

There is one feature at Laycock's establishment which is not met with at other dairies, and which accounts for the large area of ground included within it; viz., the *cattle layers*. When a joint of beef is purchased for a London table, we little think how long a distance the animal which contributed it travelled before reaching Smithfield market. A very large number of oxen from the midland counties find their way to Smithfield every Monday and Friday; but perhaps the Scotch black cattle furnish the most remarkable instance of change of abode. The system pursued with respect to these cattle is worthy of a brief notice.

Most of the cattle (middle-horns) bred in the Hebrides are sent to the mainland of Scotland to be fattened for the market. At the ferry of Kyle Rhea, for example, six or seven thousand annually pass over from the islands to the mainland. They are not ferried in boats, but by means of ropes about a yard in length, with a noose at each end, one of which is tied to the tail of the beast that is to swim before, and the other round the jaw and under the tongue of the next; and the beasts are thus connected together until there is a string of six or eight. The time of high-water is chosen, when, although the passage is wider, there is less current. The beasts are led into the water as quietly as possible until they are afloat, when they immediately cease to resist; then the man at the stern of the ferry-boat taking hold of the rope that holds the foremost beast, the vessel is rowed steadily across. The cattle being thus landed, they, as well as other cattle reared in the mainland, are sold to drovers from the south, at what are called *trysts*. These trysts are not fairs or markets appointed by public authority, but by concert among the dealers. These drovers make their appearance in the Highlands about the end of April or the beginning of May, and give notice that on a particular day, and at some central place in the district, they will be ready to purchase. At the market or tryst thus appointed, the sellers and the drovers meet and bargain for the disposal of cattle, the price being regulated, as in other instances, principally by the relation between supply and demand. During the summer these trysts are occasionally held, and the cattle bought there are pastured in southern districts.

The black cattle lately alluded to do not come from the Hebrides; but the steps by which they reach London are not the less curious. The district of Galloway, at the south-western part of Scotland, contains a breed of *polled* or hornless cattle, highly valued for their grazing qualities; and these cattle are fattened in the Norfolk or Suffolk pastures for the London market. It is said that nearly one-half of the beasts which supply the metropolis come from these pastures; a large proportion being the Galloway black cattle. This transfer gives rise to an extensive system of dealing between the Scotch graziers on one hand, and the Norfolk and Suffolk graziers on the other. Of one set of dealers who only carry the cattle to the northern counties of England, Mr. Ross says:—"A mountaineer will travel from fair to fair for thirty miles round, with no other food than the oaten cake which he carries with him, and which requires neither fire, table, knife, nor other instrument to use. He will lay out the whole, or perhaps treble of all he is worth (to which the facility of the country banks is a great encouragement), in the purchase of thirty or a hundred head of cattle, with which, when collected, he sets out for England, a country with the roads, manners, and inhabitants of which he is totally unacquainted. In this journey he scarcely ever goes into a house, sleeps but little, and then generally in the open air, and lives chiefly upon his favourite oaten bread. If he fails of disposing of his cattle at the fair of Carlisle, the usual place of sale, he is probably ruined, and has to begin the world, as he terms it, over again. If he succeeds, he returns home only to commence a new wandering and a new labour, and is ready in about a month perhaps to set out again to England.

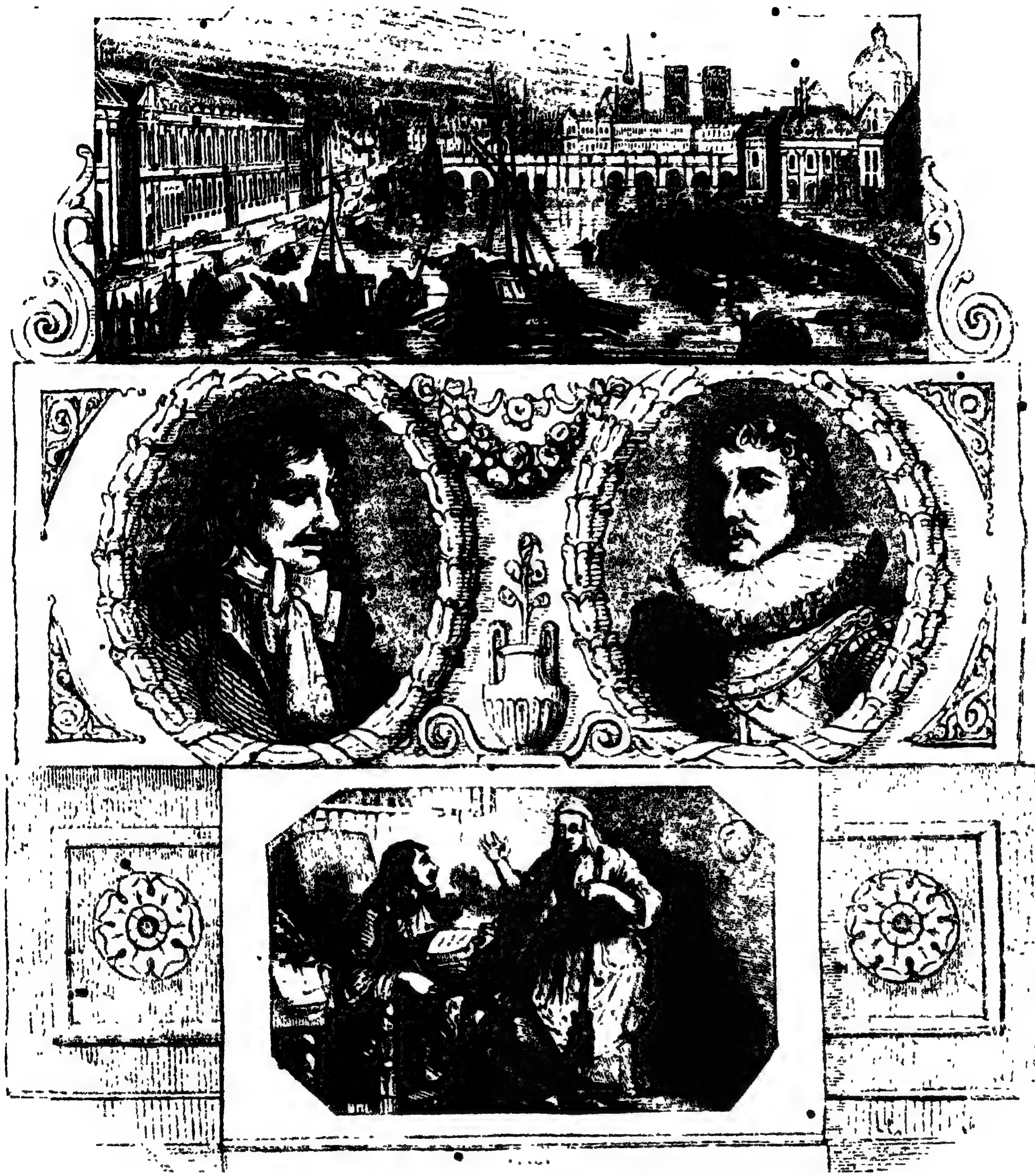
Sir Walter Scott's tale of the 'Two Drovers' gives a graphic picture of the mode of life followed by these men. But the mode of transference to the Norfolk and Suffolk pastures is on a more regular system, and is managed thus:—The chief sales for the southern markets take place in September and October. The cattle are sent off in droves numbering from two to three hundred, under the charge of a person called the *topsman*, who generally precedes the drove to see that grass is secured at proper stations, and to make all necessary arrangements. He has under him other drovers, in the proportion of one to about thirty head of cattle. The journey to Norfolk occupies about three weeks. The expense in summer and autumn is from twenty to twenty-four shillings per head; and in winter, when they are fed with hay, the cost is ten or fifteen shillings per head additional. The cattle are purchased and paid for by the drovers, sometimes in cash; but more generally a part of the price is paid in bills, and sometimes the whole of it. In some instances, where the farmer has confidence in the drover, he consents that the purchase-money shall be remitted from Norwich, or that the money shall be paid when the drover returns to Galloway. On the 17th of October, a cattle-fair is held at the village of St. Faith's, near Norwich; and at this fair, which is one of the largest cattle-fairs in the kingdom, the Norfolk graziers purchase the Galloway cattle from the drovers. The drover considers himself well paid, if, every expense of the journey being discharged, he clears from half a crown to five shillings per head; and when he has either money or credit to take a very large drove, this rate of profit yields a good remuneration. The Norfolk farmer then keeps the cattle several months on his pastures, feeding them principally on turnips, and deriving no trifling profit from the manure which they yield. The Suffolk graziers pursue nearly the same plan as those of Norfolk; and in the spring and early part of the summer, the droves, very much fatter than when they left Galloway, proceed on their journey to London. We have described this system in the present tense for convenience; but the extensive use of steam-boats and railroads has made, and is still making, important changes in the modes of conveying cattle from place to place.

It is to form a quiet resting-place for cattle, brought in some such way as this from the northern districts, that cattle layers are provided at the outskirts of London. The cattle are ready for the salesman at Smithfield by an early hour on Monday and Friday mornings, but they arrive in the neighbourhood of London one day prior. The grazier agrees with the proprietor of the cattle layers for a few hours' shelter for the cattle, at a charge of a few pence per head. Fodder is supplied to the cattle at a stipulated price; and the manure given by the animals forms no inconsiderable an article of profit to the proprietor of the layers. For such part of the cattle as may be milch cows, the agreement is such that the layer-proprietor has the milk given by them during the time of their sojourn; the milking is performed by his own people, and he has thus an opportunity of testing the milking properties of the cows before they go to market, and of regulating his purchases thereby. At a very early hour in the morning of Monday or Friday, or else late on the previous evening, the cattle leave the layers, and proceed to Smithfield, where they finally pass into the hands of the butchers of the metropolis and its environs.

The reader will thus see that much curious information may be obtained from an inquiry into the dairy system of the metropolis. Many of the points which have been slightly touched on here might be further elucidated by referring to a few of our past articles, such as the "Supply of Food to large Towns," the "Chemical Properties of Milk," the "Making of Butter and Cheese," and the notices of "British Cattle."



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[Molière and his Localities. At top—Paris in the seventeenth century, from a view by Perelle. The Royal Galley and Barge occupy the centre of the River. The Medallion to the left contains a portrait of Molière, from a picture by Garneray; and that on the right, Louis XIV., from a print by Gaultier. At bottom—Molière reading a MS. play to his servant, from a French design.]

LOCAL MEMORIES OF GREAT MEN.

Molière.

Rich as our literature is in dramatic composition, it can boast of no comic writer except Shakspere who, on the whole, can be said to equal the great French dramatist. To the wit, humour, and forcible satire of the best of our own authors, he adds a just and piercing insight into all the varieties of human character, which they did not possess. This is Molière's great glory; but it is not all. The wittiest of English dramatists, of Molière's age, are also the most licentious, and the least imbued with any high moral purpose; Molière, on the contrary, shows throughout his works a purity of feeling and principle; there is nothing in them to offend the ear of modesty; sobriety and virtue are there never made ridiculous or contemptible.

Molière's proper name was Jean Baptiste Poquelin, and he continued to be called by that appellation till he joined the theatre as a performer, when he assumed the one by which he was to be so honourably shown to the world. He was born at Paris in 1622. His father was a tapissier, that is to say, a maker of tapestry, or perhaps, as he might be more correctly described, an upholsterer. His father held the office of "valet de

chambre de tapissier" to Louis XIII. The boy was to have learnt the same trade, and remained therefore in his father's shop till he was about fourteen years old. Up to that time his education was limited to instruction in reading and writing. Dr. Johnson's definition of "a true genius," as "a mind of large general powers accidentally determined in some particular direction," receives a felicitous illustration from the life of Molière. He had a grandfather who was much attached to him, and often took him to one of the theatres of the metropolis. The impression thus made on the youthful Poquelin's mind was deepened by his relative's often expressed wish that his grandson might become a celebrated actor. He became disgusted with his trade, and, what was of more importance as showing that some high thoughts were at work within him, with his ignorance. Returning one day from the theatre greatly depressed in spirits, his father inquired the reason, and then first became aware how ardently his son desired a better education than he had received. The grandfather joined his entreaties to the youth's, and they were happily successful. He was sent to the college of Clermont, under the care of the Jesuits, and there remained for four or five years. On leaving Clermont in 1641, he was obliged to fulfil his father's office about the king, and in the performance of this duty accompanied Louis in the expedition that resulted in the capture of Perpignan from the Spaniards. Nothing is known of his course from this time to the year 1645, when we find him, under the name of Molière, performing with a company of citizens in the Faubourg St. Germain, who at first made no charge for admission, but subsequently endeavoured to combine profit with pleasure in the ordinary mode: they were, however, unsuccessful. Another gap here occurs in Molière's biography; but when we next meet with him it is under circumstances that show how greatly the interval had been improved. In 1653 we find him at the head of a company in Languedoc, whither he had been invited by the Prince of Conti, who was struck with his histrionic talents.

From Languedoc he went to Lyon, where in the same year he produced his first play, 'L'Etourdi,' with such success that two other theatrical companies joined him. In 1654 he returned to Languedoc, and brought out his second piece, 'Le Dépit Amoureux,' which was also successful. The Prince of Conti now made him director of the entertainments he gave in the province; and valued him so highly both as a dramatist and a man, that he treated him as a personal friend, and offered him the post of private secretary. Molière by this time knew beyond the possibility of mistake the "direction" in which his "genius" was to be directed, so he declined the flattering offer; observing, "I am a tolerable author, but I should make a very bad secretary." After playing at Grenoble and Rouen, the company finally settled at Paris, where Molière was introduced to the king Louis XIV., before whom they played the tragedy of 'Nicomède' in 1658, at a theatre erected in the grand hall of the old Louvre. At the close of the piece Molière came forward and observed, in reference to the superior company that was in the habit of playing before the king, that they were but faint copies of excellent originals, and hoped that his majesty would allow them to play one of the little comic pieces which had been so successful in the provinces. Louis consented, and the piece, which was one of those early works of the dramatist that have been lost, gave great satisfaction. The king desired them to stay in Paris, and gave them the title of "Troupe de Monsieur." The same year 'L'Etourdi' and 'Le Dépit Amoureux' were played with great applause before a Parisian audience; in 1659 his celebrated 'Précieuses Ridicules' appeared, and was received with such uncommon favour that the prices of admission were trebled on the second performance, and the piece under these circumstances continued to be played for four months. The design of this play was to ridicule those ladies, called Précieuses, who indulged in an affected mode of talking peculiar to the time. Molière's reputation as a great dramatist commenced with this piece. To us it may appear little better than a farce, but the Parisians beheld in it the advent of an author in every way qualified to represent boldly and strikingly the prevailing manners and character.

From this time Molière's comedies followed one another in rapid succession: we need only notice those which have some interesting circumstance connected with them. In 1662 appeared the 'Ecole des Femmes,' the principal character of which, Agnes, is the original of Wycherley's character of Mrs. Pinchwife, in the 'Country Wife.' It was not very successful; and Molière, indignant at what he conceived to be the injustice with which it had been treated, wrote another piece, entitled 'La Critique de l'Ecole des Femmes,' in which he held up its opponents to public derision. This was received with great applause. 'L'Impromptu de Versailles,' produced the same year, is noticeable from its having been preceded by a poem of thanks to the king for a pension of one thousand livres which had been granted to him. Molière was now held in high esteem at the court; so much so, indeed, that the king, it is stated, on one occasion, sat down with him at the same table, in order to shame some of his officers, who treated the dramatist with haughty coolness. His prosperity was about this time clouded by domestic unhappiness. He married Armande Bejart, a young lady of seventeen, whose coquetry and levity kept him in continual inquietude. With true wisdom, he lessened the evil he could not get rid of, by pursuing his literary labours with increased assiduity; and various new plays soon appeared. In 1665 the king took Molière's company into his own service, conferred upon it the title of "Troupe du Roi," and a pension of 7000 livres. In the following year appeared a humorous attack on the physicians, called 'Le Médecin malgré lui,' which is well known on the English stage by Fielding's version of it, entitled 'The Mock Doctor.' But the play by which English audiences are best acquainted with Molière is the 'Hypocrite,' an imitation of 'Le Tartuffe,' which was first played about this period. The more bigoted part of the people of Paris were so enraged at the exposures of this piece, that they made the most earnest representation to the king against it, and succeeded in obtaining an order from Louis, stopping its performance with the first night. Molière soon convinced the king of the injustice of such an order, and induced him to revoke it; but for the present, he himself postponed any further representation. At this very time, a profane farce was having a considerable run; which induced Louis to express his wonder to the Prince of Condé at the very different treatment shown to the two new pieces. "In the farce," replied the prince, "religion only is ridiculed; but Molière, in the 'Tartuffe,' has attacked even the priests." When the play was a second time announced, the theatre was crowded to excess; but just as the actors were about to commence, a prohibitory order arrived from the parties who held authority during the king's absence in Flanders, to the great indignation of the audience, and the pleasure of the fanatics, who had once more succeeded in stopping the performance. Molière instantly returned the spectators their money, extinguished the lights, and without a moment's delay despatched two of the company to the king to solicit his protection. They returned with an order in their favour, and 'Le Tartuffe' commenced a career of uninterrupted success.

The same year, 1672, which beheld Molière produce one of the best of his comedies, his 'Femmes Savantes,' witnessed also his reconciliation with his wife, after a long estrangement. About the same time he quitted a milk diet, to which he had long restricted himself, on account of a complaint in the chest, and allowed himself animal food. This increased his complaint; but he was now engaged on one of the most amusing of his pieces, 'Le Malade Imaginaire' (another and still more severe attack on the physicians); and he worked on with great industry till it was completed. It was produced in 1673, we need scarcely say with complete success. Molière played the principal part, Argan. On the third day of the performance, he complained that the pain in his chest had much increased, and his wife and Baron the actor endeavoured to persuade him not to play. "And what, then," said Molière, with that thoughtfulness and goodness of heart which was so conspicuous in him through life, "is to become of my poor performers? I should reproach myself if I neglected them a single day." So Molière played that night, and for the last time. The circumstances of his death were painfully interesting. The character he had to perform, at one period of the piece, pretends to be dead, and it was a generally received opinion for some time that Molière died at this precise moment; so that when he should have shown to the persons whom Argan had intended to deceive, that it was only a feint, the actor lay motionless in real death. The poets could not afford to lose so striking an incident merely from the consideration that it might be untrue; so, without inquiry, they sent forth a variety of effusions to commemorate it. The best has been thus translated:—

"Here Molière lies, the Roscius of his age,
Whose pleasure while he lived was to engage
With human nature in a comic strife,
And personate her actions to the life.
But surly Death, offended at his play,
Would not be joked with in so free a way:
He, when he mimick'd him, his voice restrain'd,
And made him act in earnest what he feign'd."

Molière, however, did not die under such distressing circumstances: a convulsion seized him during the performance, which he endeavoured to conceal by a laugh. As soon as the piece was over, he went into Baron's box in the front of the house, who remarked that he appeared worse than ordinary: his hands in particular were very cold. Baron accompanied him home, where blood began to flow from his mouth, which at length suffocated him. He died on the 17th of February, 1673. One can scarcely now hear without indignation that a man so distinguished for his brilliant and well exercised talents, for the rectitude of his principles and the kindliness of his heart, for everything in short that could make a man worthy of the love, respect, and admiration of his fellow-men, should have been denied the rites of sepulture; yet such was the fact; and it was only by the direct interference of the king, that the archbishop of Paris was induced to consent that he should be buried in consecrated ground; and then the consent was clogged with the paltry and ridiculous restriction that the ceremony should be performed without any pomp. The great dramatist was accordingly buried by two priests, with "maimed rites," in the cemetery behind the chapel of St. Joseph, Rue Montmartre. The restriction could not prevent a goodly assemblage of Molière's friends, who assembled to do him the last honours, each bearing a flambeau. His widow, in the natural excitement of her feelings, cried out, "What! will they refuse burial to a man who deserves an altar?" That very morning she had been obliged to appease an infuriated mob assembled round the door, by flinging money among them! About the close of the last century, the place of Molière's interment was pulled down, and his remains removed to the garden of the Museum of the Academy. There they rest in honoured repose. His countrymen, however, are now about erecting a monument to his memory. It has been designed by M. Visconti, and will be placed in the Rue de Richelieu. "The monument will consist of a niche with two detached columns on each side, surmounted by a semicircular pediment, ornamented with sculpture and dramatic attributes. The statue of Molière will be placed in the niche on a semicircular pedestal, in a sitting posture, and in the attitude of meditation. On each side of the statue, in front of the columns, will be allegorical figures with extended wings, representing—one the gay, and the other the serious, character of his plays. The basement will be ornamented with rich sculpture, and will bear two large masks throwing out water into a basin. The principal inscriptions will be as follows:—On the pediment, the words, 'A Molière;' on the sides of the pedestal, 'Né à Paris, le 15 Janvier, 1622; et mort à Paris, le Fevrier, 1673.' The titles of his different comedies will also be inscribed on the pedestal. It is expected that the inauguration of the monument may take place on the 17th February, the anniversary of Molière's death."

We conclude with a short anecdote which is interesting as affording a glimpse into the habits of composition of this distinguished writer. He is said to have been accustomed to read his comedies before performance to a favourite servant or housekeeper, named Laforet, and when he perceived that the passages which he intended to be humorous and laughable had no effect upon her, he altered them. The same kind of principle may be observed in another recorded habit of his, that of requesting the actors to bring their children to the rehearsal of a new piece, that he might judge of the effect of particular passages by the natural emotions they raised in their minds.

Mode of Packing the St. Michael Oranges.—Walked this morning to an orange-garden beyond the little village of Ribeira Secca. At its entrance was a pathway with evergreen faya-trees on each side, meeting in arches overhead. Suddenly we came upon merry groups of men and boys, all busily engaged in packing oranges, in a square and open plot of ground. They were gathered round a goodly pile of the fresh fruit, sitting on heaps of the dry calyx-leaves of the Indian corn, in which each orange is wrapped before it is placed in the boxes. Near these circles of laughing Azoreans, who sat at their work and kept up a continued cross-fire of rapid repartee as they quickly filled the orange-cases, were a party of children, whose business it was to prepare the husks for the men, who used them in packing. A quantity of the leaves being heaped together near the packers, the operation began. A child handed to a workman, who squatted by the heap of fruit, a prepared husk; this was rapidly snatched from the child, wrapped round the orange by an intermediate workman, passed by the feeder to the next, who (sitting with the chest between his legs) placed it in the orange-box with amazing rapidity, took a second and a third and a fourth as fast as his hands could move, and the feeders could supply him, until at length the chest was filled to overflowing, and was ready to be nailed up. Two men then handed it to the carpenter, who bent over the orange-chest several thin boards, secured them with a willow band, pressed it with his naked feet as he sawed off the ragged ends of the boards, and finally despatched it to the ass, which stood ready for lading.—*A Winter in the Azores.*

Bouquets at Night.—At a recent lecture at the Royal Institution, the fact was stated that flowers during the day gave out oxygen gas, which supports life, and that during the night they emitted carbonic acid gas, one of the most deleterious and poisonous gases known. The headaches, and other aches, usually following balls, &c., where it is now the fashion for the ladies to display large bouquets, may be caused in part by the gas emitted.

PUBLIC RECORDS OF ENGLAND.

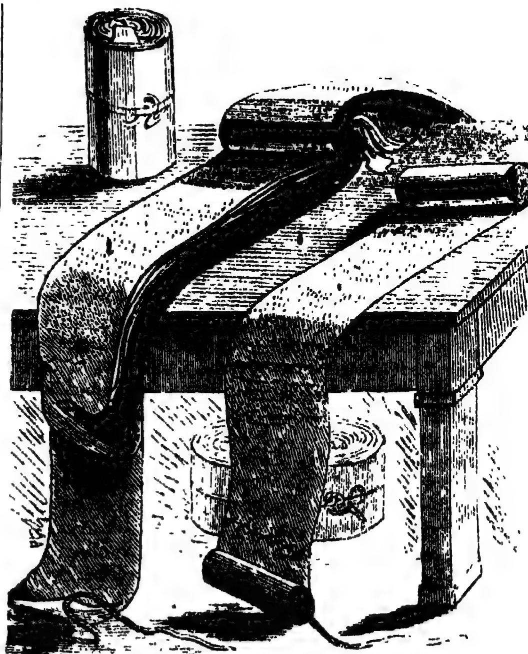
RECORDS, in the legal sense of the term, are contemporaneous statements of the proceedings in those higher courts of law which are distinguished as Courts of Record, written upon rolls of parchment. Matters enrolled amongst the proceedings of a court, but not connected with those proceedings, as deeds enrolled, &c., are not records, though they are sometimes in a loose sense said to be "things recorded." In a popular sense the term is applied to all public documents preserved in a recognised repository; and as such documents cannot conveniently be removed, or may be wanted in several places at the same time, the courts of law receive in evidence examined copies of the contents of public documents so preserved, as well as of real records.

The course we propose to take, is to treat that as a record which is thus received in the courts of justice. The act, for instance, which abolished Henry VIII.'s court of augmentation (of the revenues obtained from the suppression of the religious houses), declared that its records, rolls, books, papers, and documents should thenceforth be held to be records of the Court of Exchequer; and accordingly we have seen many a document, originally a mere private memorandum, elevated to the dignity of a public record, on the sole ground of its official custody, and received in evidence as a record of the Augmentation Office. On the other hand, numbers of documents which were originally compiled as public records, having strayed from their legal repository to the British Museum, have thereby lost their character of authenticity. ('Proceedings of the Privy Council,' vol. v., p. 4, edited by Sir Harris Nicolas.)

"Our stores of public records," says Bishop Nicolson, and, we believe, with perfect accuracy, "are justly reckoned to excel in age, beauty, correctness, and authority whatever the choicest archives abroad can boast of the like sort." (Preface to the 'English Historical Library.') Yet rich as our own country is beyond all others of modern Europe in the possession of antient written memorials of all branches of its government, constitutional, judicial, parliamentary, and fiscal, memorials authenticated by all the solemn sanctions of authority, telling truly, though incidentally, the history of our progress as a people, and handed down in unbroken series through the period of nearly seven centuries—the subject of its public records now appears, we believe, for the first time in a work like the present. The amount of public care given to this subject during the last forty years, is shown by the appointment of successive commissions and parliamentary committees of inquiry, by a cost, in one shape or another, amounting to little less than a million of pounds sterling, and by the passing of an act of parliament designed to effect a thorough change in the system of keeping and using the public records.

By far the greater part of records are kept as rolls written on skins of parchment and vellum, averaging from nine to fourteen inches wide,* and about three feet in length. Two modes of fastening the skins or membranes were employed: that of attaching all the tops of the membranes together bookwise, as is employed in the Exchequer and courts of common law; whilst that of sewing each membrane consecutively, like the rolls of the Jews, was adopted in the Chancery and Wardrobe.

The solution of the reasons for employing two different modes has been thought difficult by writers on the subject. It appears to have been simply a matter of convenience in both cases. The difference in the



circumstances under which these rolls were formed accounts, we think, satisfactorily for the variation of make. In the first case, each inrolment was often begun at one time and completed at another. Space for the completion of the entry must have been left at hazard. Besides, several scribes were certainly engaged in inrolling the proceedings of the courts, and the roll was liable to be unbound, and to receive additional membranes after it had once been made up. In the other case, the business of the chancery being simply registration, the scribe could register the documents before him, with certainty that nothing in future would at all affect their length, and he was enabled to fill every membrane, and perfect the roll as he proceeded.*

The material on which the record is written is generally parchment, which, until the reign of Elizabeth, is extremely clear and well prepared. From that period until the present the parchment gradually deteriorates, and the worst specimens are furnished in the reigns of George IV. and William IV. The earliest record written on paper, known to the writer, is of the time of Edward II. It is one of a series entitled 'Papirus magistri Johannis Guicardi contra-rotulatoris Magnæ Costumæ in Castro Burdegaliæ, anno domini M°. ccc°. viii°. These records are in the office of the queen's remembrancer of the Exchequer.

Tallies were records of wood.

The handwriting of the courts, commonly called court-hand, which had reached its perfection about the reign of our second Edward, differs materially from that employed in chartularies and monastic writings. As printing extended, it relaxed into all the opposites of uniformity, clearness, legibility, and beauty which it once possessed. The ink, too, lost its antient indelibility; and, like the parchment, both handwriting and

* The rolls of the Great Wardrobe exceed eighteen inches in width.

* The land-tax commissioners' Act of 1 Geo. IV. extends, it is said, 900 feet when unrolled, and employs a man three hours to unroll the volume. Other records have the shape of books. Doomsday-Book, called both 'Rotulus' and 'Liber,' the oldest and most precious of our records, counting eight centuries as its age, and still in the finest order, is a book; and as occasions presented themselves for adopting this shape without infringing on ancient precedent, the far more accessible shape which we now call a 'book' seems to have been employed.

ink are the lowest in character in the latest times: with equal care, venerable Doomsday will outlive its degenerate descendants.

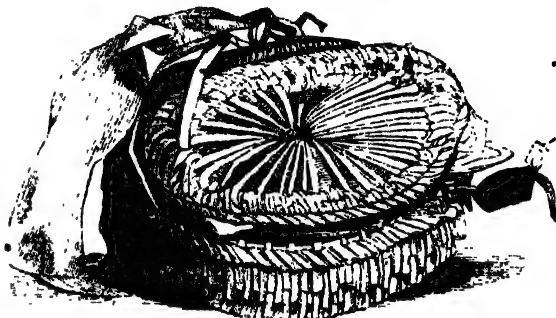
All the great series of our records, except those of parliament, are written in Latin, the spelling of which is much abbreviated, and in contractions, there can be little doubt, derived from Latin manuscripts. The reader who desires to be further informed on the subject may consult the collection which Mr. Hardy has inserted in the preface to his 'Close Rolls of King John,' and Mr. Hunter, in his preface to the 'Fines of Richard I. and John.' During the Commonwealth, English was substituted; but soon after the Restoration, Latin was restored, and the records of the courts continued to be kept in Latin until abolished by act of parliament in the reign of George II. In certain branches of the Exchequer, Latin continued in use until the abolition of the offices in very recent times. Many of our statutes from Edward I. to Henry V., and the principal part of the rolls of parliament, are written in Norman French. Petitions to parliament continued to be presented in Norman French until the reign of Richard II., whose renunciation of the crown is said to have been read before the estates of the realm at Westminster, first in Latin and then in English. After this period we find English, which had doubtless always remained in use among the lower classes, often used in transactions between the people and government—a sure sign that the distinctions of Norman origin were nearly absorbed among the people at large.

Sir Francis Palgrave's edition of the 'Calendars and Inventories of the Treasury of the Exchequer,' some of which were compiled as early as the fourteenth century, are extremely interesting in exhibiting the ancient modes in which records were preserved. No uniform system of arrangement seems to have been employed, but a different expedient was used for the preservation of nearly every separate document. Great numbers, judging from the quantity found in arranging the miscellaneous records of the king's remembrancer of the Exchequer, were kept in pouches or bags of leather, canvas, cordovan, and buckram, a mode which is still used in this department of the Exchequer. These pouches, which fasten like modern reticules, are described by Agarde, who was keeper of the treasury of the Exchequer, "as hanging against the walls." The following drawing represents a leathern pouch containing the tallies and the account of the bailiff of the manor of Gravesend in the 37 and 38 of Edward III.



When they have escaped damp, they have preserved their parchment contents for centuries in all their pristine freshness and cleanliness. Chests, coffers, coffins, and "forcers" bound with iron and painted of different colours, cases or "scrima," "skippets," or small turned boxes, and hanapers, or "hampers of twyggys," were also used.



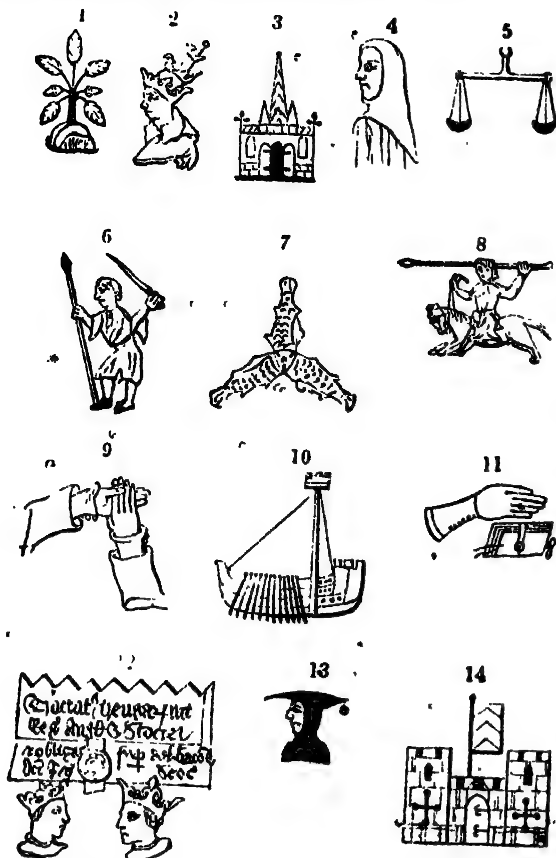


These two last illustrations are about one-third of the size of the originals, which remain in the "treasury" of the Exchequer.

Inscriptions on labels, letters, and "signs" furnished the means of reference. We owe the following specimens of these "signs" to the kindness of Sir Francis Palgrave, who has obliged us with the loan of the blocks, cut for his 'Calendars of the Exchequer' before mentioned. These signs in most cases bear some analogy to the subject of the documents which they are intended to mark.

The rolls of the justices of the forest were marked by the sapling oak (No. 1). Papal bulls, by the triple crown. Four canvas pouches holding rolls and tallies of certain payments made for the church of Westminster were marked by the church (3). The head in a cowl (4) marked an indenture respecting the jewels found in the house of the Fratres Minores in Salop. The scales (5), the assay of the mint in Dublin. The Briton having one foot shod and the other bare, with the lance and sword (6), marked the wooden "coffin" holding the acquittance of receipts from Llewellin, Prince of Wales. Three herrings (7), the "forcer" of leather bound with iron, containing documents relating to Yarmouth, &c. The lancer (8), documents relating to Aragon. The united hands (9), the marriage between Henry, Prince of Wales, and Philippa, daughter of Henry IV. The galley (10), the recognizance of merchants of the three galleys of Venice. The hand and book (11), fealty to kings John and Henry. The charter or cyrograph (12), treaties and truces between England and Scotland. The hooded monk (13), advowsons of Irish churches. And the castle with a

banner of the Clare arms (14), records relating to the possessions of the earl of Gloucester in Wales.



Our ancestors before the Norman conquest pursued no system of public registration, though there are numerous charters of the Anglo-Saxon kings and deeds between private individuals still existing, and historical events are found chronicled in monastic chartularies.

When a written account is made of any act, it is clear that it is made not for the exclusive benefit of one party only. In the Doomsday-book of the Norman conqueror, we see evidence that his power was far from absolute. The financial registrations (Rotuli Pipæ) of Henry I., in whose reign the earliest example is found—the records of the judicial proceedings of the "Curia Regis," which begin with Richard I.—and the special acts of the monarch himself enrolled on the "close," "patent," and "charter" rolls commencing in the reign of John—are all so many irresistible proofs how gradually larger interests were trenching on the will of the king, who formally recognised no other power than his own in the government of the kingdom. The judicial records of the King's Bench and Common Pleas, and the parliamentary records beginning with Edward I., are further evidence of the increasing influence of the nobles and commonalty of the realm.

The king was legally considered as possessing the sovereign power. His peace was broken when the subject fell by the hand of the murderer; his parliament was to be summoned; his honour to be vindicated; and his army to be levied. It was the king's exchequer, the king's wardrobe, the king's court, and essentially the king's chancery; for the chancellor's functions were originally those of a private secretary, combining duties both spiritual and temporal. The chamberlain of the exchequer was called "une grand office, car il gardera le treasour del roy, s. les recordes." In Henry III.'s reign there were treasuries in the Tower of London and the New Temple. From the latter place, in the 20th of Edward I., out of a chest secured by nine keys, certain records of the Chancery were taken by the king's orders. (*Rot. Claus.*, 20 Edward I., m. 13 d.) The Tower had certainly become a permanent treasury for records in the 33rd of Edward I., when a transfer to it was directed to be made of all the papal privileges touching the crown or kingdom, from the treasury of the exchequer at Westminster. (*Rot. Claus.*, 33 Edward I., m. 3.) Another 'treasury' is described by certain 'memoranda,' made 19 Edward III., as within the cloister of Westminster Abbey, near the Chapter-House. This 'treasury' still remains. A single pillar supports the vaulted chamber, which is yet to be seen, with its double oak doors grated and barred with iron, and locked with three keys, and its drawers and 'tills' labelled by Arthur Agarde, who was custos of the records it contained.

The contents of several 'treasuries' at various periods seem to have been consolidated in the Chapter-House of Westminster Abbey, which was fitted up in its present state for the reception of records by Sir Christopher Wren. The only existing depositories of records besides the Chapter-House which preserve the appellation of 'treasury,' are the rooms in the Rolls-House, being the 'treasury' of the King's Bench Records, and a portion of the Carlton Riding-House as the 'treasury' of the Common Pleas Records.

The demolition of the old 'treasuries' adjoining Westminster Hall scattered their contents in all quarters of the metropolis. Thus the records of the king's remembrancer, of the Exchequer, and the Common Pleas, migrated from Westminster Hall to the late Mews at Charing Cross; and thence, to make room for the National Gallery, to Carlton Riding-School. The records of the late lord-treasurer's remembrancer and Pipe-Office are entombed two stories deep in the vaults of Somerset House. Those of the King's Bench for a time rested opposite St. Margaret's Church, but were shifted to the Rolls-House in Chancery Lane to make room for the present Rolls Court at Westminster.

Thus from time to time have repositories, as well undignified with the antient title of 'king's treasury' as deficient in that careful superintendence which originally accompanied the title, arisen in all parts of London; and in 1837 a committee of the House of Commons reported that it had seen the Public Records, the most precious part of the king's 'treasure,' deposited at the Tower over a gunpowder-magazine, and contiguous to a steam-engine in daily operation; at the Rolls, in a chapel where divine service is performed; in vaults two stories underground at Somerset House; in dark and humid cellars at Westminster Hall; in the stables of the late Carlton Ride; in the Chapter-House of Westminster Abbey; in offices surrounded by and subject to all the accidents of private dwellings, as the Augmentation Office and First Fruits.' At the present time, besides the offices for modern records attached to each court, we may enumerate the following repositories, with their different localities, as containing the public records:—

The Tower, in Thames Street.
Chapter-House, Westminster Abbey.
Rolls Chapel, Chancery Lane.
Rolls House, Chancery Lane.
Duchy of Lancaster, Lancaster Place, Strand.
Duchy of Cornwall, Somerset House.
Common Pleas, Carlton Ride and Whitehall Yard.
Queen's Remembrancer's Records, in Carlton Ride and tower of Westminster Hall.
Augmentation-Office, Palace Yard, Westminster
Pipe-Office, Somerset House

Lord-Treasurer's Remembrancer, Somerset House.
Land Revenue, Carlton Ride.
Pell-Office, 1, Whitehall Yard.
Exchequer of Pleas, 3, Whitehall Yard.
First-Fruits Office, Temple.*

It would seem that as early as the commencement of the fourteenth century the officers charged with the custody of the records were found to be either insufficient or neglectful of the performance of their duties. Since the time of Edward II., scarcely a reign has passed without a special temporary agency being appointed to restore the public records to good order. The necessity probably arose from the functions of the officer charged with the care of the records being altogether changed, as in the instance of the Master of the Rolls, who was the *bonâ fide* 'gardein des roules' in early times.

A very important step has recently been taken by the legislature to provide for the better custody and preservation and more convenient use of the public records. An act was passed (1 and 2 Vic., c. 49) calculated to remedy effectually what preceding efforts had in vain attempted, by constituting a special agency for the custody of the records, to the want of which, and a sufficient responsibility, all the defects of the old system are attributable. By this act the Master of the Rolls is made the guardian of the public records, having powers to appoint a deputy; and, in conjunction with the Treasury, to do all that may be necessary in the execution of this service. The act contemplates the consolidation of all the records, from their several unfit repositories into one appropriate receptacle; their proper arrangement and repair; the preparation of calendars and indexes, which are more or less wanting to every class of records; and giving to the public more easy access to them. Lord Langdale, the present Master of the Rolls, to whose influence the change of system is greatly due, has already brought the above act into as full operation as circumstances have allowed. The old custodyship of most of the offices has been superseded, and the offices are constituted branches of one central depository, the Public Record Office, which, until a proper building is ready, is at the Rolls-House in Chancery Lane. The Victoria Tower of the new Houses of Parliament has been named as a likely repository for the public records. The arrangement and repair, as well as the making of inventories of records, have been generally begun in most of the offices.

Preparations are also making for a uniform system of calendaring, a gigantic work, which a century will hardly see completed. To select what is useful from the judgments of a single court, the Common Pleas for instance, at least 1200 miles of parchment nine inches wide must be patiently read through; and yet, without the performance of this labour, these records can scarcely be consulted.

ENDEMIC AND EPIDEMIC DISEASES.

[Continued from p. 292.]

If the inhabitants of alluvial plains and marshy regions have their endemical diseases, so too have the dwellers in hilly and mountainous districts theirs. One of these is the *goître*, or swelled neck. It is met with principally in Switzerland, Savoy, the Tyrol, and in Derbyshire in Britain (whence called familiarly the Derbyshire neck). Its locality is often very confined; thus the inhabitants of the valley of the Rhône are frequently afflicted by it; while in the valley of Chamouny, separated only by the Col de Balme, it is seldom seen. It affects females almost exclusively. The cause of this disease is involved in much obscurity. It has been usually attributed to bad diet and the use of impure water. Dr. Bally, a resident in a goitrous district, informed Dr. J. Johnson that the waters which trickled down from the mountains would produce or augment the disease in eight or ten days, while those who abstained from these remained free from the disease. Dr. Mason Good found that at Matlock it was chiefly the children of the poor who suffered.

A much more terrible disease, *Cretinism*, is found in the Alps and Pyrenees, and is indeed sometimes combined with goitre. The Cretin, stunted in growth, and having a huge malformed head, presents a hideous object to the traveller. The intellect participates in the physical debility, and the individuals drag on their days in a state of imbecility, quite contented if they can pass their lives in eating and sleeping. This disease, like goitre, has been attributed to the bad diet and impure water of these regions, and like it, is very confined in its localities, a valley frequently containing numbers of cretins, while the surrounding hills are quite free from them. The dirty and degraded state of many of the villages will contribute to the production of the disease: and it is said that since these have been somewhat improved, the numbers have diminished. Dr. James Johnson doubts this, and thinks rather that since the belief which once so generally prevailed (as in Turkey, regarding idiots) that a cretin was a special gift of providence to the family in which he was found has declined, they are kept more out of sight than formerly: and indeed he saw them driven to the back parts of the villages as he approached. He says, concerning the places in which they are found, "The Vallois, situated in a damp soil, and sheltered by stupendous mountains, is the land of cretinism, and Sion is its capital. I explored this town, and I can safely aver that in no part of the world, not even excepting the Jews' quarter at Rome, or the lanes of Itri and Fondi, in the kingdom of Naples, have I seen such intense filth. With the exception of two or three streets, the others present nothing on their surface but a nameless mass of animal and vegetable corruption: the alleys are narrow, and the houses constructed as if they were designed for malefactors' dungeons rather than for the abodes of men at liberty."

Warm climates are liable to several endemical diseases; we can only briefly allude to two or three of these. *Elephantiasis*, or the Barbadoes leg, is so termed from the huge misshapen limb, resembling in some degree that of an elephant. It is especially endemic in Barbadoes, in Cochin, the coast of Ceylon, and Egypt. Until a century ago it was confined in Barbadoes exclusively to the black population; since then the whites have also suffered, but neither there nor at Ceylon do the imported whites suffer. It excepts neither rank nor sex, and often comes on in very early life. The disease commences with fever and inflammation of the limb, both of which afterwards subside; repeated recurrences, however, at length produce the tumefied and shapeless form which gives the name to the disease.

The *Frambœsia*, or *Yaws*, an eruptive disease, so called from its resemblance to raspberries, and consisting of the production of numerous excrescences on different parts of the surface of the body, is endemical in Guinea, and has been thence transported with the slaves to America and the West Indies. It has been supposed by several authors to be identical with the

* By a recent regulation, attendance is now given at these offices from 10 till 4. Search in all Indexes, Calendars, &c., 1s. Inspection of a Record, 1s. Copies 6d. per folio. The public may make extracts or copies in pencil, hitherto forbidden or allowed as a favour.

leprosy with which the Jews were affected during their passage through the Wilderness. As one attack prevents future ones, the Africans expose their children to it, it being readily communicable by contact.

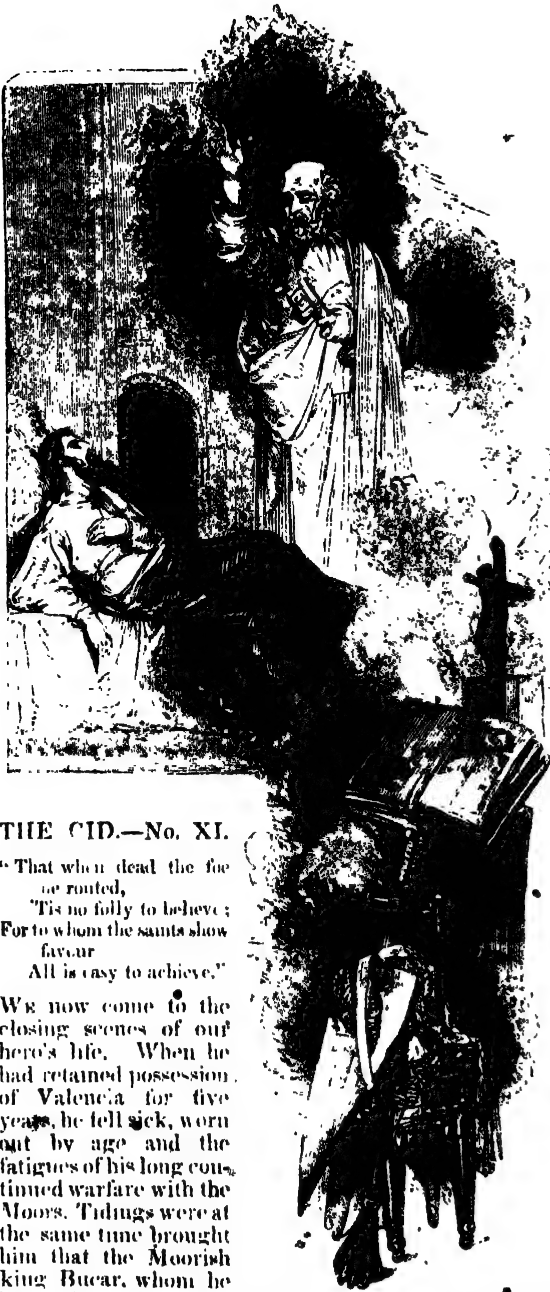
The *Dracunculus*, or *Guinea-worm*, is a very singular disease, which affects chiefly the negro tribe. It consists of a long thin worm, which lies embedded in the interstices of various muscles of the body, but especially those of the legs. It creates immense irritation, and incapacitates the person suffering from following his employment. The worm is frequently extracted by an inch or two at a time, a piece of thread being fastened around the remainder to prevent its retraction. The entire length has sometimes reached two or three feet. The Africans carry this disease with them into the countries into which they are imported as slaves; and as it sometimes reigns epidemically, nearly half the negroes on an estate have sometimes been at once disenabled working. Dr. Chisholm met with three thousand cases in three years in the island of Granada. The disease is not exclusively confined to persons of African origin, and prevails very extensively in different parts of India, especially the presidency of Bombay. The mode in which this animal becomes introduced into the human system has excited much discussion, but the opinion, held by various travellers, as Park, Bruce, &c., and by persons who have carefully investigated all the circumstances and localities of the disease, corresponds with the popular one, namely, that the ova of this worm obtain admission by reason of the persons affected having drunk of the waters of certain wells containing them. This would indeed seem almost to be proved to be the case by the fact that only those of the inhabitants of a certain district who partook of the waters in question have become affected, while those who had not done so remained quite healthy; while again the providing improved cisterns and wells has frequently been found to banish the disease from a locality in which heretofore it committed great ravages.

Several hot climates produce endemical diseases of the eyes, and this is especially the case with Egypt, in which country a most destructive form of *ophthalmia* prevails: this, it would seem, from the accounts of historians, has existed there from remote ages; and in our own day its virulence was manifested in its attacks upon both the French and British armies while employed in that country. That this should be the case can excite no surprise when it is recollected that persons passing through this land are exposed to intense heat by day and a chilling dew by night, to the emanations from the banks of the Nile, and to the irritation of the sandy soil, which also adds, by the reflection it produces, to the already dazzling and fatiguing brilliancy of the solar rays.

Field Flowers.—Of all the flowers with which summer with a lavish hand graces our pastoral scenery, filling the air with fragrance and covering the earth with beauty, none are more generally attractive than the wild climbing plants of the hedges. They are most numerous towards the latter part of summer or the beginning of autumn. By interweaving their slender boughs, covered with foliage and flowers, or with berries no less beautiful, or, as in the wild clematis, crowned with their light and feathery seeds, they hang about the trees and bushes, and contribute very materially to that aspect of richness and beauty which the landscape presents at this part of the year. As the stems of these plants are so slender and yielding that they would sink under the weight of their flowery clusters, or their numerous leaves, or be shattered to pieces by the winds, if they did not find support from other plants, we see them hanging by their tendrils, or bending their stems into the most graceful twinings, and clothing the trunks of aged trees—" those green-robed senators of mighty woods, tall oaks"—with an abundant verdure, the dark glossy green of which contrasts with their grey lichen-covered trunks, or with the brighter tints of that massy canopy which overhangs them. It is very evident that the ascending position of the greater number of plants is necessary both for their prosperity and the welfare of man and the lower animals. How soon would the profuseness of vegetation become a curse rather than a blessing, if it were not for the provisions made for this ascending direction! Were it not for this, the whole earth would be clogged with stems and foliage, and the industry of man could not effect a clearance for culture or pathway. At every step his foot would be entangled. Then indeed the woods would all be pathless, and the want of a free circulation of air would render the plants coarse and rank, and destroy some of the most delicate among them. The vegetable matter would accumulate by their continual decay, and render the air impure; while, as in the jungles of hot countries, the noxious reptile would lurk there unseen, and the wild animal would there lie down in his lair. One circumstance respecting twining plants is worthy of remark. Some of them follow the apparent course of the sun, and turn around the supporting stem, from left to right. This is the case with the common black bryony of our woods, which, with its shining heart-shaped leaves and small green flowers, may be seen in any wood during the summer months climbing over the trees. Other plants, as the large white bindweed or convolvulus, twine contrary to the sun, or from right to left. The peculiar tendency of the stem of every plant is always constant in each individual of the species. Thus a large bindweed, wherever found, always turns one way, and a plant of black bryony the other; we never see its position reversed. Even if the gardener turn it in another direction, the plant, if unable to disengage itself and assume its natural bias, will eventually perish. It is very common about rivers, streams, or other moist grounds, and is a very graceful plant. The large white bells, which are called by the country-people "old man's nightcap," are exceeded by no blossoms in whiteness of tint or beauty of outline; and the leaves, which are heart-shaped, are very handsome. It often creeps over the drooping willow-tree, festooning it lightly with its large flowers, or it wanders over the green bank, or almost covers some little rill, so that the heedless traveller might plunge his foot unexpectedly into the midst of the hidden waters. It is, like the other species of wild convolvulus, very tenacious of life, and if it gets into the hedge of a garden, it costs the gardener considerable trouble in its eradication. Indeed, in some places, it seems almost impossible to get rid of it; and summer after summer it unfolds its unwelcome blossoms, which are not less beautiful, though less rare, than many of the plants that are carefully nurtured in the enclosure.—*Flowers and their Associations.*

Love of Country.—Men, almost universally, prefer their native country before every other; on account of what they consider to be its singular beauty or superior natural advantages. It is a well-known fact, that they who are natives of a dreary and barren region are as strongly attached to the land of their nativity, as they are whose native country is of the most fertile and beautiful description; a striking proof of which is furnished by the people of Iceland, who are remarkably attached to their country, although it is truly "a dismal situation, waste and wild." The same principle is powerfully displayed in the simple and affecting picture drawn by a poor African, when speaking of his native home, as given by Mr. Riland, in his 'Memoirs of a West Indian Planter.' "Ah, Sir," said poor old Cæsar, "every one loves his native land; the places where his fathers lived, the trees, flowers, and animals; and I think with pleasure now, even upon the dreadful snakes, because they belong to my country. God made our part of Africa such as any man might love. The sky is there not constantly covered with cold clouds and always dripping with rain, though we had our rainy seasons; but then they were more regular, and we knew when to expect them. The sun does not there bathe his beams in mists and fogs, but pours its kindly heat on all things; and you can't imagine how fast it makes the plants grow; the wide-spread trees give cool shadows, superior (but you will smile at me) to the finest palaces I ever saw in Europe; all was delightful except the curse of the slave-trade."—*Carter's Lectures on Taste.*

How to Acquire Knowledge.—A Persian philosopher, being asked by what method he had acquired so much knowledge, answered, "By not being prevented by shame from asking questions where I was ignorant."



THE CID.—No. XI.

"That when dead the foe be routed,
'Tis no folly to believe;
For to whom the saints show favour
All is easy to achieve."

We now come to the closing scenes of our hero's life. When he had retained possession of Valencia for five years, he fell sick, worn out by age and the fatigues of his long continued warfare with the Moors. Tidings were at the same time brought him that the Moorish king Bucar, whom he had before driven from the plains of Valencia, had returned to the siege with a mighty force of horse and foot, and with thirty kings in his alliance.

"Sorely grieved the Cid these tidings,
As upon his bed he lay;
Straight he pray'd the God of heaven
For protection and for stay;
That from out this grievous peril
He would safe his servant guide:
Thus he pray'd, when on a sudden,
Lo! a man stood at his side.
There he stood in bright apparel,
Robed in raiment white as snow,
Scarce the Cid his face could gaze on,
For so dazzling was its glow."

This figure proved to be Saint Peter, sent from heaven to declare to the Cid that he had but thirty days to live; for at the expiration of that time he would meet the saints in glory.

"'Dear art thou to God, Rodrigo,
And this grace he granteth thee,
When thy soul hath fled, thy body
Still shall cause the Moors to flee;
And, by aid of Santiago,
Gain a glorious victory.'"

"This," the Saint added, "God hath granted to my prayers, for the honour thou hast always shown to my house and altar at Cardeña." With these words the holy Apostle returned to heaven, leaving my Cid lost in praise and thanksgiving.

These tidings cheered the Cid's heart greatly, and he straightway made preparations for his approaching end. Having ordered all the Moors to quit the city for the suburbs, he gathered together his followers in the church of San Pedro, and there made known the prophetic vision with which he had been honoured; then having charged them after his death to obey the commands of Don Geronymo, the bishop, Alvar Fañez, and Pedro Bermudez, he took a solemn farewell of all, confessed his sins, received absolution, and returned to his palace. Here he sickened fast, and for seven days before his death could take nothing but a little of the myrrh and balsam he had received from the Sultan of the East.

The day before that appointed for his decease, the Cid called together his wife and his nearest kinsmen and friends, to give them directions how to act after his death:

"'First when that my soul hath left it,
Wash my body clean and sweet;
Fill it next with myrrh and balsam,
And with spices, as is meet;
Then with ointments well anoint it
From the head unto the feet.
Mourn me not, my dear Ximena—
Mourn me not, ye maids, I pray;
Lest your weeping and your wailing
To the foe my death betray.'"

Then turning to Alvar Fañez and Pedro Bermudez, his kinsmen and companions in arms, he said,—

"'Should the Moorish king assail ye,
Call your hosts and man the wall:
Shout aloud, and let the trumpets
Sound a joyful battle-call.
Meantime then to quit this city
Let all secretly prepare,
And make all your chattels ready
Back unto Castile to bear.
Saddle next my Babieca,
Arm him well as for the fight:
On his back then tie my body,
In my well-known armour dight.
In my right hand place Tizona:
Lead me forth unto the war;
Bear my standard fast behind me,
As it was my wont of yore.
Then, Don Alvar, range thy warriors
To do battle with the foe;
For right sure am I that on ye
God will victory bestow.'"

The Cid then makes his will, which he commences in this manner,—

"'He who spareth no man living,
Kings or nobles though they be,
At my door at length hath knocked,
And I hear him calling me.
As to go I am prepared,
I do make my testament,'" &c.

After repeating some of the above directions, he

orders that Babieca, when he dies, should be decently and carefully buried, "that no dogs may eat the flesh of him who hath trodden down so much dogs'-flesh of Moors." His own body he directs to be borne to San Pedro de Cardeña, and there buried under a bronze monument hard by the altar of the Holy Fisherman, as he calls St. Peter. He forbids any female mourners to be hired to bewail his death, as the tears of Ximena would suffice without the purchase of others. His conscience still rebuking him for the deceit he had practised on the two Jews who had lent him money on his departure into exile, he bequeaths them another coffer of silver; and after a few other legacies, he leaves the rest of his property to be distributed among the poor. Then turning to his friends, who were weeping around his couch, he said,—

"'Friends, I sorrow not to leave ye;
If this life an exile be,
We who leave it do but journey
Homeward to our family.'"

On the day following the Cid prayed sore to heaven: "Oh! Lord Jesus, thy kingdom is over all—all rulers are in thy hands. Thou art King over all kings, and Lord over all lords. I beseech thee, seeing thou hast given me so much honour and glory, and so many victories over the enemies of thy holy faith to be pleased to pardon all my sins, and take my spirit to thyself." Saying this, he gave up the ghost. He died in the year 1099, in the seventy-fourth year of his age.

Gil Diaz, his faithful servant, a Moor by birth, but a convert to Christianity, fulfilled all his instructions with regard to the body, and gave it a sitting and upright position, by placing it on a chair, and leaving it to stiffen between two boards.

On the twelfth day after his death everything was in readiness for the departure of the Christians from Valencia. It was the hour of midnight when they led forth Babieca, who gazed at his dead lord "with an air of sorrow more like a man than a brute." They strapped the body firmly down to the saddle, and tied the feet to the stirrups. His helmet and armour were of parchment, painted so as to resemble steel. A shield of the same, marked with his own device, was hung about his neck, and his beloved Tizona was fixed upright and bare in his right hand:

"There he sat all stiff and upright,
So Gil Diaz did contrive;
He who had not known the secret,
Would have deem'd him still alive.

By the fitful glare of torches
Forth they go at dead of night;
Headed by their lifeless captain,
Forth they march unto the fight."

The bishop of Valencia, Don Geronymo, led Babieca by one rein, and Gil Diaz by the other. Pedro Bermudez led the van, with the Cid's banner upraised, guarded by four hundred knights of noble birth. Then followed the beasts laden with the baggage under a similar guard. Next came the Cid's body, guarded by a hundred knights; and Ximena and her women, with six hundred knights, brought up the rear. The procession moved on into the plain

"All so silent and so softly,
That there seemed not twenty there."

As the day broke, they were met by the Moorish hosts, but Alvar Fañez assailed them with great fury. At the head of the foe rode a Moorish woman, called "the Star," from her great skill in shooting, and by the Chronicle termed a queen, who with a hundred female companions, like the Amazons of old, did great execution with their long-bows. Had they been said to be Spanish Arabs, at that period the most polished and chivalrous race in Europe, we might deem this account unworthy of credit; but if we suppose them Africans, as we are at liberty to do, considering they were in the army of the king of Morocco, the fact loses all improbability, as we know, from the Arabian epic of 'Antar,' that among the tribes of the desert women not unfrequently took part in the perils of warfare, martial courage being regarded as one of the female virtues. These heroines were all conquered and slain by the Christians.

King Bucar and his thirty royal allies were astounded at beholding what, through a miraculous illusion, seemed to their eyes a prodigious force advancing against them:

"Seventy thousand Christian warriors,
All in snowy garments dight,
Led by one of giant stature,
Mounted on a charger white;

On his breast a cross of crimson,
In his hand a sword of fire,
With it hew'd he down the Paynims,
As they fled, with slaughter dire."

This terrible warrior was no other than Santiago, or St. James, who, as foretold by St. Peter, was to lend his aid to the Christians. Panic-struck, the Moors fled to their ships, but ten thousand were drowned in the attempt to get on board, and multitudes more were left dead on the field of battle. King Bucar himself escaped but twenty of his confederate kings were slain. His camp fell into the hands of the Christians, who found in it so vast a spoil, that the poorest that entered came away rich. Thus laden, they continued their way to Castile; and wherever they halted on the road, they took the Cid's body from Babieca's back, and set it upright on a wooden horse which Gil Diaz had made for the purpose.

The Moors in the suburbs of Valencia, who had beheld the rout of King Bucar and his host, remained quiet all that day and the ensuing night, through fear of the Christians, but having neither seen nor heard them return to the city, they marvelled greatly, and on the following morning one of them ventured to ride round the walls. He saw no warders on the ramparts, heard no clashing of arms within, and found every gate closed, save that through which the Christians had gone forth, and on the wall he found a paper saying that the Cid was dead, and that the Christians had left Valencia to the Moors. Great was their joy to return within its walls.

ENDEMIC AND EPIDEMIC DISEASES.

[Continued from p. 312.]

Epidemics do not usually, like endemics, exist for an indefinite period in the places wherein they appear. Their origin, progress, and termination are frequently matters of historical record. Many of those which formerly afflicted our ancestors have disappeared, to be replaced by others unknown to them. Their importance, measured by the devastation they produce, is infinitely greater than that of endemics; and indeed they constitute the greatest calamity to which the human race can be subjected. "What," says M. Littré, "are twenty battles, or even twenty years of the severest warfare, compared to the ravages caused by these dreadful scourges? The cholera has killed in a few years as many persons as fell during all the wars of the French Revolution. It is calculated that the Black Pestilence of the fourteenth century carried off in Europe alone above twenty-five million souls; while that which devastated the world during the reign

of Justinian did still more execution. What war again has the universality of an epidemic? The cholera, generated in India, spread thence over entire Europe, and penetrated even to America."

Before enumerating a few examples of the principal epidemics, we may make one or two remarks upon some of the circumstances favouring their production. In this respect epidemical diseases vary much. Some, such as the cholera and the influenza, seem to be very independent of local circumstances; while others, as the plague, yellow fever, &c., seem to be very much influenced by these. A change in the constitution of the air has been very generally supposed to occur during the epidemic visitation; no positive proof of this can be furnished, but it is well known that at least its temperature exerts great influence, for the disease is always most severe when this is elevated. The history of various plagues and pestilences shows us that coincident with them violent convulsions of nature, as earthquakes, tempests, and volcanic eruptions, frequently occur. Noah Webster has collected fifty well-marked instances, wherein one or other of these prevailed. It is not a little curious that at these times vast numbers of insects are frequently produced, and this sometimes only in certain localities, or of some particular species: thus, at the plague of Lausanne (1613), and in Holland (1635), an incredible number of flies were produced; and at the plague of Dantzig (1709) spiders abounded. On the contrary, the numbers of the feathered creation have often been found to become much diminished, while a great mortality of several of the domesticated animals frequently occurs: this was the case with regard to the cattle prior to the Great Plague of London. To some other circumstances tending to favour the production of epidemic diseases, we can refer with great satisfaction, since modern improvements in these respects have caused a marked diminution in these awful visitations. We allude to the neglect of cleanliness, and the insufficiency or bad nature of the diet of the common people. A pestilence always primarily and principally attacks the poorest and dirtiest portions of a community; such was the case in London, Marseilles, and Moscow. No fact can be better attested than that European cities have become freed from the plague in proportion as they have improved in cleanliness and good order. In cities which have not participated in the march of improvement, pestilential epidemics still prevail; and thus, although the plague is scarcely now ever met with in European towns, it is still nearly endemical in those of the East: but even in these it attacks the most miserable and dirtiest portions. "I have always remarked," says Clot Bey, "in Egypt, that low humid places, ill-ventilated houses, the quarters of the indigent, and populous cities with narrow obstructed streets, pay the largest tributes to this disease. Thus at Cairo, Constantinople, and Alexandria, it is always in the populous quarters of the Jews and Armenians, and in the faubourgs and impassable streets, that the disease rages with the greatest intensity." "In the plague of 1834-5, at Alexandria," says Aubert, "the poorer classes suffered far more than the rich. Their quarters were horribly decimated." Both these authors describe the residences of the poorer classes in the East as fitted rather for animals than men, while their inhabitants suffer under all the afflictions of misery, filthiness, and insufficient diet. Among the great numbers who perished at the plague of Moscow, few of note suffered; and in reference to this point, Lord Clarendon, returning to London after the Great Plague (emphatically called the Poor's Plague), observed that few of his friends were missing. Then, again, how many of the plagues of antiquity were connected with famine. "Certain it is," says Dr. Bateman, "that famine and pestilence have ever been observed together from the earliest ages of the world, and are continually mentioned in combination in the sacred writings. 'The plague after a famine,' was an old Greek adage. When articles of food are scarce, they also frequently are corrupted, and may thus contribute to dispose the system to a state of disease." The vast increase of facilities for intercommunication, the extension of commerce, and the improvements in agriculture (especially the introduction of the potato), have rendered famines both much less common and less possible than heretofore.

In the brief notice we purpose to give of some of the principal epidemic diseases, the *Plague* naturally first arrests our attention, from its antiquity, its formerly almost universal prevalence, and its great diminution in modern times. But we are at once met with a difficulty, arising from the vagueness and uncertainty of the medical nomenclature employed in former times; for as the word plague was almost indiscriminately employed to designate any great or devastating disease, there can be no doubt that it has been frequently applied to diseases which in modern times have received distinctive appellations. If this remark applies, as it does, to some of the diseases raging during the middle ages, yet does it more so to those of a remoter antiquity. And thus doubts have been raised whether the famous plague of Athens was the true plague or not. However this may be, a more frightful example of an epidemic could scarcely be pointed out than this, as described to us by Thucydides, who witnessed it. Transported from Æthiopia, the disease broke forth with the most terrible violence upon the unfortunate inhabitants of Attica, who had filled Athens with a population fleeing from the attacks of the Lacedæmonians during the Peloponnesian war. The Athenians raised a cry, so often repeated under similar circumstances, that the wells had been poisoned by their enemies. The mortality was immense, but the licentiousness and recklessness that prevailed were even more dreadful. In this epidemic, it is said, the celebrated Hippocrates, the father of medicine, in vain essayed his art; and from the same pestilence perished Pericles, just as his talents and decision were most required by the fickle and ungrateful Athenians. We have accounts of numerous other plagues of antiquity. During the reign of Marcus Aurelius (A.D. 166), one developed itself in almost every part of the Roman empire. The emperor, entering Rome in triumph after obtaining victories in the East, carried with him the seeds of the disease into the capital. It passed the Alps and the Rhine, ravaging severely the countries called by the Romans barbarian.

During the reign of Gallus (252), a celebrated pestilence desolated Europe. Zonaras states that it lasted for fifteen years. Both the Roman armies, which were assembled to repress the advance of the barbarians and the Goths who devastated Italy, became the victims. Procopius and Nicephorus, cotemporary historians, describe a terrible plague during the reign of Justinian: commencing in 542, it is said to have lasted half a century. It was carried to Marseilles in 583, and to Paris in 590. The mortality resulting from it has been estimated by some at one hundred and eight millions. Its characters resembled accurately those of the more modern plagues. From this period this disease has continued to manifest itself at intervals in different countries; and at one period it was as common in Europe as it is at present in the East; and Paris and London were almost as frequently infested by it as Cairo or Constantinople.

Ozanam enumerates eleven celebrated plagues prior to Christ, and about one hundred up to the period of the Great Plague of London. The most celebrated

plague of comparatively modern times was the Black Plague, or Death of the Fourteenth Century, the third universal plague, says Stow, since the Deluge. A notice of Dr. Hecker's interesting account of this has already appeared in this Magazine.* By far the most terrible plague with which Britain has been visited occurred in 1665, and is known in history as the Great Plague. This century had already been very prolific in the disorder, for Sir Gilbert Blane enumerates forty-five plagues as occurring from 1602 to 1665, of which twelve happened in England. But none of these approached to the extent of the ravages committed by the Great Plague. Commencing at first in St. Giles's, the disease soon spread to the surrounding parishes, and, notwithstanding the most vigilant precautions, entered the city. A general panic ensued: the nobility and royal family soon quitted the metropolis, and were shortly followed by numbers of others; so that a complete emigration into the surrounding districts commenced, and was only checked by the lord mayor refusing to grant certificates of health, and by the inhabitants of the neighbouring townships in their own defence refusing to admit the fugitives. Many merchants and others took refuge on board vessels in the river, and were supplied with provisions, &c. from Woolwich, Greenwich, and other parts of the Kentish side. Some of these ships went even out to sea, and others put into various harbours. The pestilence continued to increase, and the misery consequent upon it augmented in like proportion; and from the want of employment for servants, artisans, &c., more than forty thousand of that class were roaming about without a home. Superstition and fanaticism added terror to sufferings sufficiently horrible. Tales and predictions of all kinds were circulated; crowds assembled around the cemeteries to see the apparitions, while pretended prophets traversed the streets, announcing with maniacal gestures the entire destruction of the city. The chief thoroughfares became overgrown with grass, whole streets were tenantless, a most awful silence prevailed everywhere, interrupted only by the ravings of delirium, the loud laugh of debauchery issuing from the taverns, or the tinkling of the bell announcing the arrival of the pest-cart. The rites of sepulture were necessarily dispensed with; the bodies were promiscuously shot into a huge pit, attended only by the abandoned characters to whom the duty of collecting them was assigned, and who often performed their horrid offices in a manner the most revolting. The very means adopted to prevent the spreading of the disease sometimes multiplied the number of victims, for when a house was once marked by the red cross, designating the existence of the disease within it, its miserable inmates were prevented for one month all egress; and thus confined and panic-struck, communicated it to each other. The provident cares of the magistracy prevented famine being added to the other calamities; and the contributions of the rich kept pace in some degree with the wants of the poor. King Charles II. (with all his faults, he could feel for the distresses of his subjects, as his conduct on this occasion and that of the Fire of London shows), contributed £1000 per week; and it is said that the almost incredible sum of £100,000 was distributed to the necessitous weekly. At the approach of winter the violence of the disease rapidly diminished, and those of the inhabitants who had fled, joyfully returned to their homes. Although it was computed that nearly one hundred thousand persons had perished, yet in a short time the chasm in the population was no longer visible.

The plague of Marseilles, which occurred in 1720, has attracted much attention. That city had twenty times before suffered from this disease, but never to the terrible extent it did upon the occasion in question. We have no space to enter into any of the details, but cannot pass over without notice the admirable conduct and self-devotion of Belsunce, the bishop of that city, a name almost as much honoured in France as that of Howard is among ourselves. This excellent man, of whom Pope says—

> "Why drew Marseilles' good bishop purer breath
> When nature sickened and each gale was death;"

was at once the almoner, physician, and spiritual director of the poor. An eye-witness of his efforts observes, "On the vast and frightful theatre of our sufferings we had not to seek the prelate. He was always wherever the greatest peril was to be found. His zeal knew no other measure than the wants and miseries of his flock. His firmness was never once shaken by the various forms by which death surrounded him." Some idea of what he had to encounter, and of the state of Marseilles during the prevalence of this pestilence (which in its progress carried off sixty thousand persons), may be gathered from the following extract from one of the bishop's letters:—"We have seen all the streets of this town lined on each side by the unburied and half-putrefied dead, and so encumbered by articles of furniture cast from the windows, that we have had difficulty in finding where to place our feet. We have seen the expiring sick become the objects of dread and horror to those to whom nature should have inspired the tenderest and most respectful sentiments for them; their nearest relatives cast them forth from their own houses into the midst of the streets among the dead, the stench and sight of whom were intolerable. How often have we seen with bitter grief these poor wretches stretch out their trembling hands to us as we approached them, testifying their joy at once more meeting with the sympathy of man and the consolations of religion prior to death! How often have we seen them expire before our eyes, often for want of succour. Too often, alas, have we also seen the priests of our great God shrink with terror from their duty, and seek their safety in a shameful flight; while a vast number of those ministers who continued faithful to Christ were snatched from us in the midst of their zealous and heroic charity. . . . We are now destitute of all succour; we have no more meat, nor can I procure persons to distribute what is necessary to the poor or inter the dead. The doctors who have arrived from Montpellier are frightened at the horrid stench, and will not go out to see the sick until the streets are cleansed. What would they have done a fortnight ago, when I had two hundred bodies rotting under my windows for ten days?"

The government, as some recompense, offered this excellent man a valuable preferment in another part of France; but he refused to quit the city he had risked his life to benefit, and eventually another was presented to him which would not occasion such a separation.

A similar noble example of devotion and disinterestedness was offered by Cardinal Borromeo during the plague which afflicted Milan in 1576.

[To be continued.]

* Vol. viii., p. 478.

Physical and Mental Labour.—Whilst we were in hand with these four parts of the Institutes, we, often having occasion to go into the country, did in some sort envy the state of the honest ploughman and other mechanics. For one, when he was at his work, would merrily sing, and the ploughman whistled some self-pleasing tune, and yet their work both proceeded and succeeded; but he that takes upon him to write, doth captivate all the faculties and powers of his mind and body, and must be only attentive to that which he collecteth, without any expression of joy or cheerfulness while he is at his work.—*Sir Edward Coke.*



[Croydon Church.]

RAILWAY RAMBLES.

CROYDON CHURCH AND PALACE, BEDDINGTON, ETC.

AMONG all the public buildings which lie within what may be called the environs of London, and which are at once beautiful in themselves and interesting from their historical associations, there are few which will afford greater gratification to the visitor than the old archiepiscopal church and palace of Croydon. The manor upon which they stand belonged to Lanfranc, archbishop of Canterbury, at the time of the Conquest; and as it has never changed owners from that time till its sale in the latter part of the last century (except for a short period during the Commonwealth), their history includes no slight portion of the history of the heads of the church for eight hundred years. Chicheley, the founder of the Lollards' tower at Lambeth, rebuilt the sacred edifice, and succeeding prelates from time to time have assisted in the work of its preservation. In the palace, the author of the 'King's Quair,' James I., the royal poet of Scotland, spent most probably some part of the term of his early captivity: for there is a deed or charter in existence, signed by him, and dated from Croydon, anno 1412. He must then have been in the charge of Archbishop Arundel. Here also Elizabeth was entertained by the Primate Parker for seven days. But the reminiscences of the place are innumerable; so we shall merely add one more to the number, as we wander on towards the Church.

William Walworth, London's bold Lord Mayor, who put an end to the formidable insurrection of Wat Tyler and his associates by destroying its head, was ranger of Croydon park. The church, which has of late years undergone a thorough restoration, presents a fine exterior view; the body is lighted by seven beautiful windows, adorned by an elegant porch of entrance, erected in 1829, and dignified by a stately turreted and pinnacled tower. The interior, with its lofty roof and clustered pillars, is characterised by a very cathedral-like aspect. Around the walls are a variety of monuments calculated to inspire the spectator with no ordinary interest. The first circumstance that strikes his eye is the now uncommon appearance of painted sculpture, in which this church is scarcely less rich than the famous metropolitan church of St. Mary Overies. Taking the more remarkable of the monuments in the order in which they occur, we may first mention that of Nicholas Herone, dated 1568, which has two rows of figures, one of four males, the other of six females, all facing one way, and all ranged in due order of declension from the tallest to the least. Near to this is the painted monument of a "citizen and grocer of London, 1571," with the figures of himself and his wife in niches. Archbishop Grindall's monument is a splendid work in painted sculpture. It is of marble, of great size, and bears his full-length effigy. Archbishop Whitgift's monument has also a full-length representation of the prelate in marble. In both these works, the smaller ornaments, foliage, &c. are all picked out in colours, giving to the whole a curiously rich effect. We next find an ancient square niche, which is worthy of attention on account of the beauty of its sculptured decorations; the painted arms and real helmet placed above have survived apparently the more important effigies of their owner, which must have originally occupied the niche. We now approach the most imposing-looking monument that the church contains—Archbishop Sheldon's. This extends, we should say, to at least three-fourths of the height of the lofty roof of the edifice. The prevailing colour is black. On the top white-winged infantine figures support the painted coat of arms and gilded mitre. Below this is a large tablet; whilst the lower part is occupied by a projecting tomb, on which is an exceedingly beautiful effigy of the Archbishop in white marble. He is reclining on his left arm, which is elevated on pillows, and his eyes are directed towards the spectator. Around the sides of the tomb extends a remarkable frieze, formed of death's heads, winged hour-glasses, and bones, all startlingly real in their appearance, from the excellence of the workmanship, and the contrast between the white marble of which they are formed and the black ground on which they are laid. All the prelates we have mentioned were interred here, as were also Archbishops Herring, Potter, Wake, and Abbot.

Time has played sad work with the once "fair" palace. An old brick pile in the church-yard is the first part of it that arrests our attention. A large stone window in the centre, bricked up, shows us what transformations have taken place even in the portions of the structure yet remaining. A low doorway and staircase, both of stone, admit us to the chapel, which yet remains in excellent preservation. As we ascend the steps we have a glimpse of the richly carved oaken pew erected for the use of Elizabeth, most probably on the visit before spoken of.

Farther in the chapel a screen extends across it. The pannelled ceiling and narrow pointed arched windows



[The Staircase of the Chapel, with Queen Elizabeth's Pew.]

give to this spot a fine antique expression, in admirable harmony with its original purpose. It is now used as a school-room. The other principal remain of the palace is one that it is difficult to see without regret—an antiquary would perhaps say without indignation. This is the banqueting-hall, an immense and most magnificent structure, with the lofty pointed arched and groined roof of stone, the beautiful windows, and various painted coats of arms still remaining entire. This place, which would alone amply repay one for a much more extensive journey than from London to Croydon, is now, and has been for some time, occupied as a *great Laundry!* The restoration of so splendid an ancient work is surely a case deserving the attention of those lovers of antiquities who have done much of late years to entitle them to the gratitude of posterity for preserving many a beautiful work of art for its instruction and enjoyment. The hall of Croydon Palace as yet preserves essentially its strength, beauty, and grandeur, although sadly mutilated in its parts by the alterations necessary for the business carried on in it, and desecrated by the coal-sheds and dirt-heaps that meet your eyes as you enter. Such is the state of the still glorious hall of the old archiepiscopal palace of Croydon! Hamlet's imaginary degradation of fallen greatness—

"Imperial Cæsar dead and turned to clay
Might stop a hole to keep the wind away"—

scarcely presents a more extraordinary contrast than this real picture.

Leaving the palace, the end of an old brick building with a gable roof and the letters J. W. worked in the walls, meets the eye at the top of the street. This is the hospital founded by Archbishop Whitgift for decayed housekeepers. Among its curiosities is a Bible in the dining-room, in oaken boards, which are almost covered with brass-work and solid studs; and the chapel, which is unique for its diminutive size and completeness. On the road from Croydon to Waddon, at a short distance from the former, we perceive, on looking back, the very pleasant view of the church shown at the head of this paper; and after quitting Waddon by a lane only broad enough for pedestrians, which runs over the brow of a little eminence, and which at every step arrested our eyes to admire and our hands to collect some of the beautiful wild-flowers which enrich its hedges, we hear the sound of a water-wheel, the only busy thing in that quiet place, and presently the mill and the glassy stream of the Wandle are visible by our side. Here is a scene to have gladdened the gentle heart of the prince of anglers, old Izaak Walton, even if the dark shapes gliding about in the clear brilliant waters were somewhat less plentiful than they are



[Mill near Waddon.]

From hence a short walk brings us out into the high road to Beddington, and we soon ascend one of the pleasantest of the "pleasant hills of Kent;" from the top of which we catch, through some charming openings in the foliage of the park, a glimpse of Beddington House, the aristocratic-looking seat of the ancient family of the Carews. The name of Beddington is as old as Domesday, where it is spelt Beddintone; and if any reliance is to be placed on the etymology of the word, it signifies the first lodging-place or stage out of London: Bedding in Saxon signifying a bed or lodging. The Roman road to Stone Street and Sussex passes through the parish. So early as the fifteenth century the manor belonged to the Carew family, who lost it for a time by the attainder of Sir Nicholas Carew in 1539, as "being of counsel" with the Marquess of Exeter and Lord Montacute, all of whom were beheaded by Henry VIII., on so vague a charge (that of assisting the king's enemy Cardinal Pole), that one of the best informed of contemporary writers, Lord Herbert, says "he could never discover the particular offence of those great persons." The simple fact seems to be that Henry had been so stung by the cardinal's honest and indignant invectives against him on account of the murder of Sir Thomas More, that he could not rest without the blood of those whom he knew or suspected to hold any terms of intimacy or friendship with that eminent man. In the reign of Elizabeth the attainder was reversed, but Sir Francis Carew, the rightful owner, had to repurchase the estates. He then "rebuilt the mansion-house in a very magnificent manner, and laid out the gardens, which he planted with choice fruit-trees, in the cultivation of which he took great delight, and spared no expense in procuring them from foreign countries. The first orange-trees seen in England are said to have been planted by him. Aubrey says they were brought from Italy by Sir Francis Carew; but the editors of the 'Biographia,' speaking from a tradition preserved in the family, tell us they were raised by Sir Francis Carew from the seeds of the first oranges which were imported into England by Sir Walter Raleigh, who had married his niece, the daughter of Sir Nicholas Throckmorton: the trees were planted in the open ground, and were preserved in the winter by a moveable shed; they flou-

rished for about a century and a half, being destroyed by the hard frost in 1739-40."* Elizabeth, among her other visits, paid two to Sir Francis in 1599 and 1560. The queen's oak and her favourite walk were long pointed out in memory of this occasion. Sir Hugh Platt relates an interesting anecdote of one of Elizabeth's visits to Beddington:—"Here I will conclude with a conceit of that delicate knight Sir Francis Carew, who, for the better accomplishment of his royal entertainment of our late queen Elizabeth, of happy memory, at his house at Beddington, led her majesty to a cherry-tree, whose fruit he had of purpose kept back from ripening at the least one month after all cherries had taken their farewell of England. This secret he performed by straining a tent or cover of canvas over the whole tree, and wetting the same now and then with a scoop or horn as the heat of the weather required; and so by withholding the sun-beams from reflecting upon the berries, they grew both great and were very long before they had gotten their perfect cherry colour; and when he was assured of her majesty's coming, he removed the tent, and a few sunny days brought them to their full maturity.†



[Beddington Church, with a part of the adjoining Mansion.]

The mansion and the church are close together. The first is of brick, built in the form of three sides of a square, the hollow thus formed facing the park, where a broad sheet of water extends in a direct line from the house between a noble avenue of trees. The hall is large and lofty, with a beautiful timber roof. The great door has a curious ancient lock, richly wrought, with the key-hole concealed by a shield bearing the arms of England, which moves to and fro in a groove. The church was probably erected in the time of Richard II. The tower has of late years been restored. The interior is large and handsome, and is full, to a very extraordinary degree, of rich monuments. One of these is of brass, and placed on the floor. This is an exceedingly interesting work, in perfect preservation. It contains full-length figures of Sir Nicholas Carew, who died in 1432, and of Isabella, his wife. But the great attraction of the church is the private chancel belonging to the Carew family, which is divided from the rest of the building by an elegant screen, and beneath which is their burial vault. This is a complete nest of elegant sculpture. The principal monument is that of Sir Francis Carew (1611), Elizabeth's entertainer, which is of marble, lofty, and bears his full-length effigy: altogether a very splendid work. Below is a row of figures representing Sir Nicholas Carew and his family; and, adjoining, a tomb from which the figure has been removed: both of these monuments are decorated with exquisite workmanship. The font of the church must not be passed over without a brief notice. It is square, supported by four round pillars and a massive central stem, and, altogether, tells us, in the plainest language, that many a generation has passed away since it was first devoted to its sacred use.

* Lyson's 'Environs of London,' vol. i., p. 56.

† Platt's 'Garden of Eden.'

ON THE ARTIFICIAL COOLING OF DRINKS.

It is not a little curious to observe the contrivances which different nations have adopted to give an artificial degree of coldness to the beverages customarily in use among them in warm seasons. The points are few in which the inhabitants of a warm and luxurious climate envy those of a cold and snowy region; yet we could almost apply the term envy to the desire which the warmth of a southern climate engenders for the cooling drinks of a snowy country.

The Persians are very fond of iced drinks in the summer; and as the winters of that country are sufficiently cold to produce ice in considerable quantity, a store is laid by for hot weather. Bell, in his 'Travels in Asia,' notices the practice, but Sir John Chardin describes the system more minutely. The Persians open a deep flat-bottomed ditch facing the north, and near it dig a number of shallow square holes. These holes are filled with water on a winter's evening; and by the morning a crust of ice has formed on the surface, which is taken off, broken into small fragments, and thrown into the trench. The squares are then refilled with water, and the broken ice in the trench is sprinkled with water from a convenient vessel. On the next morning a second supply of ice is obtained from the squares, while at the same time the sprinkled water, by congealing, has converted the fragments into one solid lump in the trench. Thus the operations continue, until a large mass of solid ice is accumulated, when the trench is closely covered with marine rushes, and left undisturbed till the summer. When required as a means of artificially cooling beverages, the ice is taken from the trench, and sold at so much per ass or mule load, to persons who retail it in open spots, outside the city walls. Oriental customs are so unchanging, that Chardin's account would probably apply, with very little alteration, to the present times.

Kalm, in describing the dwellings of the inhabitants of Quebec, says, "Some of the people of quality make use of ice-cellars to keep beer cool in during summer, and to keep fresh meat, which would not keep long in the great heat. These ice-cellars are commonly built of stone under the house; the walls are covered with boards, because the ice is more easily melted by stones. In winter the cellar is filled with ice and snow, covered with a little water, which congeals and hardens all into one mass.

The mode of making and storing ice in Bengal is very remarkable; but for an account of this we will refer to No. 330 of the 'Penny Magazine,' and will pass on to a notice of the use of *snow* for similar purposes. There is proof that the art of preserving snow for cooling liquors during the summer in warm climates was known in very early times. Solomon (Proverbs, xxv. 13) evidently alluded to this custom when he said, "As the cold of snow in the time of harvest, so is a faithful messenger to them that sent him, for he refresheth the soul of his masters." Plutarch also speaks of the possibility of preserving snow

by covering it with chaff and coarse cloth. The snow thus preserved was used in three or four different ways: it was drunk in a melted state; it was put in small quantities into their wine; and they sometimes placed jars filled with wine in the snow, where it was left a considerable time to cool.

Italy and the neighbouring states seem to have been the only part of Western Europe in which the practice of cooling liquors at the tables of the great was prevalent before the end of the sixteenth century. Bellori, in his account of his travels in Turkey, nearly three centuries ago, speaks of the mode in which snow and ice were preserved in pits during the summer at Constantinople, and suggests the adoption of a similar plan in France. Soon afterwards it appears that the French nobility adopted the custom, in imitation of the Italians and Spaniards. At the end of the seventeenth century there were a great many persons who dealt in snow and ice; and this traffic, which was at first free to all, was afterwards farmed out by government to monopolists. These persons raised the price so enormously, that the demand almost ceased, and the trade again became open. At the present day, the practice in France is very similar to that observed in England, where ice is stored in ice-houses in winter, for use during the summer. In some parts of Portugal it is said that snow is collected in deep gulfs or crevices during the winter, and covered first with grass or green sods, and afterwards with the litter from sheep-pens. With respect to the snow harvests of Naples and Sicily, see a very graphic account, given by an eye-witness, in our numbers 154 and 156.

The next method to which we may allude is the employment of salts and other chemical materials. The cooling of water by dissolving nitre in it, is described in the Institutes of the emperor Akbar, as practised in Hindostan in the sixteenth century. One part of nitre is directed to be thrown into a vessel containing two parts of water; and a vessel of pewter or silver, filled with water for drinking, and closed at the mouth, is directed to be immersed in the solution for several minutes, by which the temperature of the water will be reduced. This custom appears to have extended from India to Europe in the middle of the sixteenth century.

It appears that when nitre was first employed for this purpose, it was not known that other salts might be similarly employed; but this extension of knowledge took place afterwards, when experiments began to be made on the frigorific effects produced by mingled salt and snow, or nitre and snow. Boyle and Fahrenheit, and still later Mr. Walker and Professor Lowitz, have produced extraordinary degrees of cold. In Barclay's 'Argenis' is a curious account of the mode in which ice-cups were made, and which may at the same time illustrate the powerful cooling effects of the substances just mentioned. Two cups made of copper were placed the one within the other, so as to leave a small space between them, which was filled with water: the cups were then put into a pail, amidst a mixture of snow and unpurified salt coarsely pounded; and the water in three hours was converted into a cup of solid ice. The muriate, sulphate, carbonate, and phosphate of soda, and the nitrates of ammonia and of potash, are among the salts which have been employed, two or three together, to produce a cooling effect; but these are employed rather in chemical experiments than in domestic economy.

Another mode of cooling drink is to accelerate the process of evaporation. The bottles or bags made of goat-skins, in which the wandering Arabs carry their scanty provision of water, by allowing a small portion of the liquid to exude, become enveloped in a kind of aqueous stratum, which, quickly evaporating, abstracts heat from the contents of the bottle, and thus renders the liquid acceptably cool. This effect of evaporation seems to have been known in very early times, for the Egyptians, and other inhabitants of sultry climates, have for ages been accustomed to cool their water for drinking by exposing it in porous jars. According to Athenæus, King Antiochus had always a provision for his table prepared in that way. The water was carefully decanted from its sediment into earthen pitchers, and carried to the highest part of his palace, where the vessels were exposed to the clear and keen atmosphere during the night, the sides being occasionally wetted to aid the evaporation. Galen also, in allusion to the prevalent usages among the Egyptians, says that the water for drinking, having been previously boiled, was poured at sun-set into shallow pans, which were then carried to the house-top, and exposed during the whole night to the wind; and to preserve the low temperature thus acquired, the pans were removed at day-break, and placed on the shaded ground, surrounded by leaves of trees, prunings of vines, lettuce, or other slow-conducting substances.

The effect of evaporation in cooling liquors is known everywhere, and is applied in various ways. In addition to the instances given above, we may mention that the Moors introduced into Spain a sort of unglazed earthen jugs, named *bucaros* or *alcarrazas*, which, being filled with water, present to the atmosphere a surface constantly humid, and furnish, by evaporation during the hot weather, a refreshing beverage. In Guinea it is customary to fill gourds or calabashes with water, and suspend them all night from the outer branches of trees. The captains of French galleys in the Mediterranean used formerly to cool their wines in summer by hanging the flasks all night from the masts: at day-break they were taken down and lapped in several folds of flannel, to preserve them in the same state; and even in our own day, the more luxuriant of the mariners between the tropics are accustomed to cool their wines by wrapping the bottle in wet flannel, and suspending it from the cabin window.

Professor Leslie extended this method, by placing near a porous vessel containing the drink another vessel filled with sulphuric acid, which absorbed the moisture as fast as it was evaporated, and thus accelerated the cooling by accelerating the evaporation; and also explained how a small 'refrigeratory' might be fitted up so as to cool not only bottles of liquid, but also various kinds of solid food. The same distinguished philosopher showed how powerful a cooling effect might be produced by the use of the air-pump. By placing two small vessels under the receiver of an air-pump, one containing water and the other sulphuric acid, and then partially exhausting the air, the water becomes speedily converted into ice, the acid acting as an absorbent of the vapour given off by the water as the atmospheric pressure was removed. He subsequently found that *parched oatmeal* would act very well as the absorbent, thus obviating the danger of using sulphuric acid.

Iron Steam-Boats.—I had the pleasure at breakfast of sitting next Mr. Babbage, whose name is so well known among us as the author of the self-calculating machine. He has a most remarkable eye, that looks as if it might penetrate science, or anything else he chose to look into. He described the iron steamer now building, which has a larger tonnage than any merchant ship in the world, and expressed an opinion that iron ships would supersede all others; and another opinion that much concerns us, and which, I trust, will soon be verified—that in a few years these iron steamers will go to America in seven days!—*Miss Sedgwick's Letters.*



[Babiroussa.]

THE BABIROUSSA (*Sus Babyrussa*, Linn.).

The Babiroussa, or, as the Malays term it, Babi-rusa (swine-deer), is closely related to the common hog, belonging to the same genus. Fred. Cuvier indeed regarded it as the type of a distinct generic section, but most naturalists have left it in the genus to which Linnæus assigned it.

Though naturalists have been long acquainted with this animal, no living specimen, as far as we can learn, previously to the one now in the menagerie of the Zoological Society, has been imported into this country; indeed, preserved specimens are extremely rare. The only example we had ever seen (before the present living animal) was that in the collection of Mr. Steedman, which was exhibited some years since at the Colosseum. The skull of the Babiroussa, on the contrary, is brought in abundance to England by vessels trading in the Indian seas, and may be observed in most museums and collections of natural history, the long curved tusks of the upper jaw rendering it very remarkable.

It is not improbable that the ancients had a more or less accurate knowledge of the existence of the Babiroussa. Pliny notices a wild-boar, found in India, with horns projecting from the forehead; and Cosmes, a writer of the sixth century, gives the term swine-deer (χοιρέλαφος), as the designation of an Indian animal. Pliny's horned hog and this swine-deer may perhaps be the same animal. The description by the one, and the name given by the other writer, are, it must be confessed, very applicable to the Babiroussa, whose long horn-like tusks, passing through the skin of the snout, rise upwards, and then curve round upon the forehead, as if to protect the head and eyes. According to Desmarest, it is the four-horned hog of Ælian.

Bontius and Seba have both described and figured it; the former under the title Baby-roussa; the latter as the *Aper Indicus Orientalis*. Grew, in his 'Museum Societatis Regalis,' terms it the Horned Hog, and figures the skull. It is also described, and figured, but badly, by Valentyn (1726). It is the Indian Hog of Pennant ('Synopsis').

The Babiroussa is completely hog-like in its figure and manners. The living specimen in the menagerie of the Zoological Society is a very young male, certainly not half-grown, and much resembles a small pig of the Chinese breed. It is roundly formed, like a young well-bred hog, and the skin lies close, giving a compactness to its appearance.

The head is small, and high between the ears; the snout is elongated; the ears are very small, erect, and pointed; the eyes in their form and expression resemble those of a stag; the iris is brown; the skin, which is thinly clothed with short black bristly hairs, is everywhere dotted with small granulations, which spread and become rougher, coarser, and more decided about the limbs and feet, and especially on the anterior part of the head and sides of the face and underjaw. Closely as the skin lies, it becomes thrown into a series of regular and prettily arranged wrinkles or furrows with the different movements of the body, and varying in direction accordingly. As the animal turns to one side, these furrows are transverse; in other attitudes they become more or less oblique; but none are to be seen when the animal stands still or lies quietly on its straw.

The tail is rather long, slender, and tapering; the limbs are well-proportioned, and do not appear to be longer, in relation to the size of the body, than in the hog; the tusks of the upper jaw (in the present individual) are at present small, but curved back.

In its state of captivity this young Babiroussa seems as contented as a pig in its stye, and it is not only quiet, but disposed to familiarity, raising itself up on its hind legs, and putting its snout to the bars of the

enclosure, evidently soliciting food. It turns the straw over and over with its nose, and champs in eating, but utters no grunt, as does the hog, nor has it the peculiar smell of the latter. There can be little doubt that the Babiroussa might be added, and usefully, to the list of our domestic animals.

If the description we have here given of this young Babiroussa be compared with that of various writers, many points of discrepancy will be detected.*

Shaw, in his 'General Zoology,' states this animal to be covered not with bristles, but with fine, short, and somewhat woolly hair, of a deep brown or blackish colour, interspersed with a few bristles on the upper and hinder part of the back. Such is also Desmarest's account, who further observes that it stands higher on the limbs than the ordinary hog. The origin of these details is referrible to Valentyn, who describes the Babiroussa as of a more slender contour than its relatives, covered with somewhat woolly hair, with some soft bristles on the back.

In the individual in question these characters are certainly not to be seen, nor indeed were they in the preserved specimen to which we have alluded. In that specimen, which was adult, the skin was coarse, warty, and black, and the bristly hairs so short and so sparingly set, as scarcely to be noticed by a casual observer.

Lesson, who informs us that he examined many specimens of the Babiroussa at Sourabaya, in the island of Java, describes this animal precisely as we have found it. He states the skin to be black and furrowed, and furnished with only a few scattered hairs, adding, that the contour of the body is stout and massive, and the limbs robust.

The dentition of the Babiroussa differs in some respects from that of the hog; and in the peculiarities of the tusks of the upper jaw the animal stands alone.

The tusks of the lower jaw, like those of the hog, are large and exposed, and are, no doubt, very formidable weapons; but those of the upper jaw are extraordinary both in form and position. They do not pass out between the lips, but cut through the skin on the upper surface of the snout, and thus appear like horns growing in an unnatural position. If we examine the skull, we shall find that the *alveoli*, or sockets, from which these tusks proceed, are directed obliquely upwards by the side of the maxillary bone, and covered in the living animal by the skin. Hence the tusks as they grow, taking an upward direction, necessarily cut through the skin, as a sort of gum, and appear in the position described. In the adult animals these tusks attain to a great length, but are comparatively slender; they rise at first vertically, and then curve round towards the forehead, with a slight inclination outwards, forming half or three-fourths of a circle, and often pressing against the forehead.

The situation and shape of the upper tusks render them useless as weapons, and the intention of nature in giving to the Babiroussa such remarkable instruments is not apparent.

It has been alleged, but on no good authority, that the animal applies them as hooks to low branches, in order to support itself when reposing in the depths of the forest. This idea is scarcely worthy notice. In the first place, when they touch the forehead, or even nearly so, as is often the case, it would be impossible for the animal to hook them upon a branch, unless indeed the branch were a single undivided stem so appositely placed as to allow of being threaded through their circle. In the second place, they do not exist, or rather, are undeveloped in the female, who certainly requires as much support as the male.

The fact is, that this imaginary use of the tusks of the Babiroussa as hooks, which has passed current, though entitled only to ridicule, appears first to have been suggested by Valentyn, and it was from a translation of his 'History of the East Indies' that Pennant, as he informs us, borrowed the following succinct description, in which, as will be seen, this strange use of the tusks is asserted. The passage is as follows:—"Inhabits Booro, a small isle near Amboina, but neither the continent of Asia nor Africa. They are sometimes kept tame in the Indian Isles; live in herds, have a very quick scent, feed on herbs and leaves of trees, and never ravage gardens like other swine. Their flesh is well tasted. When pursued and driven to extremities, they rush into the sea, swim well, and often dive; in the forests, often rest their head by hooking their upper tusks on some bough. The tusks, from their form, are useless in fight."

Another conjecture is that these tusks may serve to protect the eyes and head of the animal, as it urges its way through the dense and tangled underwood of the forest; but here unfortunately recurs the objection that they are not developed in the female.

After all, it appears that these tusks must be regarded only in the light of a sexual distinction peculiar to the male, and without specific use. Analogous examples are abundant. The horse has tusks; the mare none. The adult male Pongo of Borneo has huge callosities on the cheeks; in the female they are absent. In many birds we see the males adorned with redundant and flowing plumes, which are denied to the female; and parallel instances occur among insects.

Of the habits and manners of the Babiroussa in its native regions we have but a general account. Lesson states it to be extremely partial to swampy places, and to delight in the water, where it swims with the greatest ease. He says it inhabits the marshy forests in the interior of the isle of Booro (one of the Moluccas), and that it feeds chiefly upon maize, giving preference to that beyond other articles of diet. Its temper is wild and savage, and it is said to preserve its ferocity and spirit of independence even when domesticated, remaining almost perfectly intractable; an assertion which may apply to adults when captured, but certainly not to individuals taken young, as is fully proved by the quiet department of the living animal in the menagerie of the Zoological Society.

The male, when adult, equals the largest hog; the female, however, is not only destitute of the curled tusks, but is much inferior in size.

The Babiroussa is not exclusively a native of Booro; it exists also in other islands of the Moluccas, as Amboina, &c., and the Celebes. It associates in troops, like the wild hog or peccary, and is said to cross the straits between adjacent islands without any difficulty.

We have not heard the young Babiroussa utter any distinct sound, and certainly nothing like the grunt of the hog; the animal, however, when irritated or enraged, makes, as reported, a deep hoarse growl.

* No perfect drawing of this animal has hitherto been given; that in Buffon's work is copied from Pennant, and is very indifferent.

CHAUCER'S PORTRAIT GALLERY.

THE FRIAR.

The corruptions of the monastic life, of which we have seen a fair example in the person of Chaucer's "Monk," led to the establishment, in the thirteenth century, of a new order of religionists, who hoped to bring back to the church of Rome the respect and affection of the people, by renouncing the wealth, the pride, the indolence, and the sensuality which so universally characterized their predecessors.

The earliest orders of mendicant friars were those established by St. Dominic de Guzman, called the Dominicans or Black Friars, in 1216, and by St. Francis of Assisi, called the Grey Friars or Cordeliers, in 1223. Various other orders followed, all of which were ultimately suppressed except two, the Carmelites or White Friars, and the Augustines. The success of these men was most extraordinary. The principles and practice of pure Christianity seemed to be once more revived. The people beheld with wonder and admiration a body of men so devoted to their spiritual interests as to adopt for their sake a mode of life that must necessarily be full of hardships and privations.

"The friars had no magnificent palaces, like the monks, no thrones, painted windows, and stately architecture; they were for the most part wanderers on the face of the earth. In these respects they professed to act on the model of Christ and his Apostles; to take no thought for the morrow, to have no place 'where to lay their head,' and to be indebted for the necessaries of existence to the spontaneous affection and kindness of the people whose neighbourhood they chanced to frequent. . . They exercised the occupation of beggar; and they undertook peremptorily to maintain in their sermons that Jesus Christ and his disciples demanded, and subsisted upon, the alms of their countrymen. It is not wonderful, that in the ages we are contemplating, persons holding out these professions should obtain the approbation of their contemporaries. But they did not stop here. Though beggars and wanderers on the earth, they determined to exhibit in their lives every proof of the most indefatigable industry. 'The lazy monk,' had become a term of general disapprobation and obloquy. They resolved to be in all respects the reverse of the monk. They did not hide in cloistered walls, and withdraw themselves from the inspection and comments of mankind. They were always before the public, and were constantly employed in the pious offices of counsel, comfort, admonition, preaching, and prayer. In pursuit of these objects they spared no fatigue: they hastened from place to place; and when their frames might be expected to be worn out with the length of the way, they were still fresh and alert, without repose and almost without aliment, for all the offices of disinterested toil or Christian instruction, and all the duties of men incessantly watchful for the salvation of their fellow-creatures. This was their labour, their study, their refreshment, and their joy."* Lastly may be noticed their most admirable exertions in the cause of learning. Their poverty, their hardships, and their incessant occupation, did not prevent them from mastering all the subtleties of the scholastic literature and philosophy of the time, and from acquiring a new reputation in the pursuit. The greatest intellects of the thirteenth and early part of the fourteenth centuries were almost all mendicants. We find among them Roger Bacon, Thomas Aquinas, Duns Scotus, and Albertus Magnus. From this period their essential prosperity, which was founded upon the opinions of the people, began to decline, as a natural consequence of the fact that a more brilliant but more delusive prosperity began to attract the eye in every direction; here in the shape of monasteries of unusual architectural magnificence, there in the exhibition of individual friars exercising the most important influence in the temporal affairs of the world. As by the rules of their order the mendicant friars could not receive estates, the munificence of their patrons was displayed in the erection or adornment of the conventual buildings. Their churches in particular were very fine, and it became a custom with persons of the highest rank to be buried in them. In the noble church of the Grey Friars in London, which was finished in 1325, four queens and six hundred persons of rank were buried, and their tombs, many of them of the most sumptuous kind, were remaining up to the period of the dissolution. Mendicancy had indeed become fashionable; and the religious mendicants, as might be expected, grew ambitious, if they were clever and energetic, or sensual when they wanted the talent or inclination to seek for anything higher than personal ease and enjoyment. Chaucer's friar, whom we now introduce to our readers, is of the latter description:—

"A Frere there was, a wanton and a merry,
A limitour, a full solemné man.
In all the orders four is none that can
So much of dalliance and fair language.
He had ymade full many a marriáge
Of youngé women at his owen cost.
Unto his order he was a noble post.
Full well belovéd, and familiár was he
With franklins over all in his country.
* * * *
For he had power of confessión,
As said himself, more than a curáte,
For of his order he was licenciat.*
Full sweetély heard he confessión,
And pleasant was his absolutión.
He was an easy man to give penánce,
There as he wist† to have a good pittánce;
For unto a poor order for to give,
Is signé that a man is well yshrive;‡
For if he gave, he dursté make avant §
He wisté that a man was répentant.
For many a man so hard is of his heart,
He may not weep, though him soré smart;
Therefore instead of weeping and prayéres,
Men may give silver to the pouré freres."

In addition to all these striking recommendations to sinners, who found it easier to open their pockets than their hearts, our friar has not neglected to prepare himself for those who might not require his spiritual services.

"His tippet was aye farsed || full of knives
And pinnés for to given fairé wives.
And certainly he had a merry note;
Well could he sing and playen on a rote,¶
Of yeddings** he bare utterly the prize.
His neck was whité as the fleur de lis.
Thereto he strong was as a champióur;
And knew well the tavernes in every town,
And every hosteler and gay tapstére,
Better than a lazar †† or a beggére;
For unto such a worthy man as he
Accordeth nought, as by his faculty,
To haven with sike lazars acquaintance:
It is not honest, it may not advance,‡‡
As for to dealen with no such pouraille,§§
But all with rich and sellers of vitaille."

A man who has so many qualifications for public favour, and who can look so shrewdly after his own interests and dignity, could scarcely fail of success in any occupation, much less in that of the mendicant of the fourteenth century.

"And over all, there as profit should arise,
Courteous he was and lowly of service.
* * *

* Godwin's 'Life of Chaucer,' vol. i., p. 192.

* That is to say, licensed to hear confession.

† There, where he knew or expected he should receive "a good pittance."

‡ Or, in other words, that he has confessed "well."

§ Boast.

|| Stuffed.

¶ A musical instrument, supposed to have been similar to the modern hurdy-gurdy.

** The meaning of the word "yeddings" is uncertain; songs or story-telling are most probably referred to.

†† Leper.

‡‡ "Honest" is here used in the sense of creditable; and "advance" in the sense of profit.

§§ Offal.

There was no man no where so virtuous.*
He was the best beggár in all his house;
And gave a certain fermé for the grant,
None of his bretheren came in his haunt.†
For though a widow haddé but a shoe,
(So pleasant was his In principio),
Yet would he have a farthing e'er he went.
His purchase was well better than his rent.
And rage he could, as it had been a whelp,
In lovédays; there could he mochel help.
For there was he, not like a cloisterer
With threadbare cope, as is a pour scholár,
But he was like a master or a pope:
Of double worsted was his semicope,
That round was as a bell out of the press.
Somewhat he lisped for his wantonness,
To make his English sweet upon his tongue;
And in his harping, when that he had sung,
His eyen twinkled in his head aright,
As do the starrés in a frosty night."

Was there ever a more happy picture of one of the best of boon companions? The very genuineness of his enjoyment makes one half in love with him. It is but too true, however, that we cannot, from this description, think very highly of the worthy friar's piety, Christian zeal, or power of self-denial, which the *un-fashionable* church reformers of the day (Chaucer and Wycliffe are among the number) held to be indispensable to even a decent observance of the duties of his calling. And so, whilst the poet silently and indirectly, but surely, attacked both monks and friars by contrasting his exemplars of each class with the "pouré parson," Wycliffe made the country ring again with his unsparing and almost indiscriminating invectives of the entire body of religionists of all kinds. In one of his works he divided this body into twelve classes, beginning with the pope and ending with the mendicant friars, all of whom he denounces as anti-Christs and the proctors of Satan. Gradually the friars became even more odious, perhaps, than the monks had ever been, as they were more meddling and personally intrusive; and their fate excited the less regret at the common ruin which awaited their establishments at the dissolution of monasteries in the sixteenth century.

The friar is a "limitour," which Mr. Tyrrwhitt defines as one licensed to beg within a certain district; and Junius, who gives a wider meaning to the term, as one who discharged his office generally within specified districts. These definitions most probably point very nearly to the truth; for, as Dr. Jamieson has observed, in the 'Visions of Piers Plowman,' the "limitour" appears as a confessor, who, by virtue of episcopal letters, although he had no parochial charge, was authorised to hear confession and grant absolution within a certain district. The love-day, on which the friar appears to have been in much request, is supposed to have been originally a day appointed for the amicable settlement of differences, on which, when the business of the occasion was concluded, a treat was given to the arbitrators. Gradually it appears that the love-day degenerated into what was little better than a mere feast, characterised by more than ordinary licence and riot. Thus in 'Piers Plowman,' the author, whilst inveighing against the luxury and amusement of the ecclesiastics, does not forget the love-day. He says:—

"And now is religion a rider, a roamer by the street,
A leader of love-dayes, and a loud beggar,
A pricker on a palfrey," &c.

* Active, indefatigable.

† That is to say, he farmed or paid a certain rent for the right of begging "in his haunt," to which consequently none of his "bretheren" were allowed to come.

Our friar was, no doubt, "a leader of love-days;" "there," says Chaucer, "could he mochel help." In the Sutherland manuscript, the Friar is represented in a black dress; from which it appears the artist considered him to have been a Dominican, although there is no allusion in the text from which such a conclusion can be established.

THE ROYAL ASIATIC SOCIETY'S MUSEUM.

Having lately described the museums belonging to the East India Company and to the United Service Association, we will now take a similarly rapid glance at that one which has been collected by the Royal Asiatic Society, which is open to the members and to other persons introduced on their recommendation.

It may be desirable to premise, in a few words, the nature and objects of the Society to which this museum belongs. Towards the end of the last century, Sir William Jones and other learned men formed themselves into a Society at Calcutta, for extending the knowledge of matters connected with Oriental literature, science, and the arts; and the Society thus founded has accumulated a valuable mass of information, which forms the 'Asiatic Researches.' But it had long been felt that the busy and active life led by the English officers and civil functionaries in India left them but little time to collect and write papers for such a work; and this led, about eighteen years ago, to the formation of a similar Society in London, the object of which was thus explained by Mr. Colebrooke, in his introductory discourse:—"One requisite is there (*i.e.* India) wanting, as long since remarked by the venerable founder of the Asiatic Society of Bengal—it is *leisure;* but that is enjoyed on their return to their native country. Here may be arranged the treasured knowledge which they bring with them, and the written or remembered information which they have gathered. Here are preserved, in public and private repositories, manuscript books collected in the East, exempt from the prompt decay which would there have overtaken them. Here too are preserved, in the archives of families, the manuscript observations of individuals whose diffidence has prevented them from giving to the public the fruits of their labours in a detached form." To form a channel by which such materials might be brought to light, the Royal Asiatic Society was established in 1824; and during the time which has since elapsed, the Society has collected that mass of Oriental curiosities which forms the museum, and which we now proceed to describe.

The museum is contained in four or five rooms of the Society's house in Grafton-street, Bond-street. The passage and hall are surrounded with various objects, consisting principally of fragments of stone covered with inscriptions, Oriental idol-figures, &c. From thence a handsome staircase leads up to the apartments forming the museum; and the wall of this staircase is lined with arms, both offensive and defensive, of almost every kind used in Oriental countries; spears, lances, javelins, darts, bows, arrows, swords, daggers, knives, axes, rifles, muskets, pistols, firelocks, shields, all have representatives in the collection ranged upon this wall. Fighting dresses, made of materials calculated more or less to shield the persons of the wearers, are also preserved here.

The first floor of the building contains the chief apartment, viz., that in which the meetings of the members are held, and in which the choicest treasures of the museum are deposited. The eastern side of this room is covered with a range of glass cases, the chief contents of which we shall notice in order, beginning with the end nearest the window. The first case contains, among other matters, a Turkish *firman*, addressed

to the patriarch of Constantinople; a tablet of gold, engraved in the Ava language; a MS. copy of the Koran, and two illuminated Sanscrit MSS. on rollers; a sacred MS. in the Pali dialect; a small but richly illuminated copy of the Koran; a leaf or sheet, with an inscription in the Burmese language, in letters formed of mother-of-pearl; and another in which the letters are of japan on a gold ground. All these books and manuscripts possess very great value among Oriental scholars, because they furnish the means of instituting comparisons between the various languages and dialects used in the East; they also illustrate the immense expenditure of time and patience which must have been called for in their production, for most of them are embellished in a very lavish style.

The adjoining glass case is filled with a miscellaneous collection of articles, among which are vases and vessels such as are in use in many Eastern countries; gold, silver, copper, and bronze coins, likewise from the East; musical intruments, comprising several varieties of guitars and flute-formed kinds; Buddhic and Hindu idols; Hindu astronomical instruments, such as an astrolabe, &c. A curious picture of the Ceylonese, "drawn by themselves," is furnished by a collection of little figures, varying from five to twelve inches in height, and representing persons belonging to various different stations of life in Ceylon, each attired, we may presume, somewhat as the real personages may be. As specimens of mechanical art, perhaps the most interesting objects are a set of japanned basket-work vessels, made by the natives of Ava; they were presented to the Society by Major H. Burney, the English resident at the court of Ava. The collection consists of about forty specimens, illustrative of the successive stages which the vessels go through, from the formation of the basket-work to the completion; as also specimens of all the various kinds of japan, varnish, &c. employed in the process.

To these succeeds a case containing numerous weapons employed by the Rajpoots and other Eastern nations, as well as implements, trinkets, &c. found among them. A range of lower cases contains a large bundle of Oriental books and manuscripts; and near this an interesting collection of models of machines and implements used by the Hindus, such as a harrow, a drill-plough, mills, a rice-mortar, a machine for beating and opening cotton, a sugar-cane mill, an oil-pressing mill, and various others. Such models as these give us an insight into the nature and quality of the agricultural implements in use among the Hindus, and which are, as may be supposed, of the simplest kind. Among the remaining articles on this side of the room are shoes, cups, amulets, &c. in use among the same nation; a model of a Hindu pleasure-boat; bottles containing specimens of Assam tea. The reader is probably aware of the attempts which have been and are being made to rear tea in the north-east corner of India; and we will therefore here only remark that at this museum, as well as that of the Society of Arts, specimens of the tea grown in Assam, the district alluded to, are preserved, to show the progress of the attempt.

The south side of the room, opposite the windows, is occupied chiefly by books, pictures, and drawings relating to Oriental subjects. Among the drawings is one, by a Hindu artist, of the Incarnations of Vishnu, one of the gods of that people. Another is a drawing, by a Chinese artist, of the interior of the English factory at Canton, fitted up for the trial of three English seamen, who had made themselves amenable to the laws. There is a series of portraits, about six in number, of a peculiar tribe or sect of people inhabiting the Neilgherry Hills in India, and presenting features, both of body and mind, differing greatly from those of the other inhabitants of that country. Captain Harkness has given a minute account of this tribe. The visitor has an opportunity of seeing the style and decoration of a Persian letter, as exemplified in one hanging on this side of the room, written by Abbas Mirza of Persia, to the Asiatic Society. The writing, in the Persian character, is very large, and the written lines are separated from one another by rich running scroll-work. Whether his Highness gives his written letter to an illuminator for the purpose of decoration, or whether the letter is written on paper previously illuminated, we cannot say; probably the latter.

The west side presents a range of bookcases from end to end, filled, as are most of the others belonging to the Society, with books relating more or less to Oriental subjects; and over these are figures, models, implements, and instruments of a miscellaneous character. The remaining or fourth side of the room contains a few objects placed between the windows by which the room is lighted. Among these is another letter from Abbas Mirza to the Asiatic Society, more elegant in its decorations than the one just alluded to, but similar in character. Passing by two or three busts of individuals who have distinguished themselves by forwarding the objects of the Society, we may mention that there is a natural curiosity, brought from a small island in the Eastern seas, and called the "double sea-cocoa-nut." It is a nut not less than a yard in diameter, consisting, like the common cocoa-nut, of a kernel enclosed in a fibrous shell.

Adjoining the room of which we have just made the circuit, and forming an ante-room between it and the stairs, is a small apartment containing a few objects of considerable interest. Among the smallest of these is one to which great value is attached by astronomers, as well as by all who desire to know the state of science among the Asiatics in past ages, viz., a small brass celestial globe, made in Asia several centuries ago, and lately belonging to Sir John Malcolm. Dr. Bernhard Dorn has given a very minute description of this globe in the 'Transactions' of the Society, from which we may borrow a short explanatory notice. It is known that at a time when the state of knowledge in Europe was at a very low ebb, the science of astronomy was much cultivated in Arabia and Persia; not only were treatises written and systems formed, but astrolabes, globes, and other astronomical instruments constructed. Several of the astrolabes have been preserved, but, as far as is at present known, only four of the globes have come down to our own times. One belonged to the late Cardinal Borgia, of Velletri in Italy; and from a description of it by Assemani, it appears to have been made, either in Syria or in Egypt, about the year 1225. The second globe, made, like the former, of brass, is deposited in the Astronomical Museum at Dresden; it was constructed, in the year 1289, by an astronomer at Hulaku Khan's court, at Maragha. The third belongs to the Astronomical Society of London; but this is believed to be much less ancient than the two just spoken of. The fourth is that which is now in the Asiatic Society's Museum. It is made of brass, and is apparently of Persian workmanship. An inscription, in the Cufic character (an alphabet formerly in use among the Saracens), when translated, runs thus: "Made by the most humble in the Supreme God, Mohammed ben Helal, the astronomer of Mousul, in the year of the Hejra 674." This date corresponds with A.D. 1275. On the surface of the globe are engraved forty-seven constellations, being all that were known at the time when the globe was made; together with the zodiac, marked with degrees; the ecliptic; words indicating the east, west, north, and south points of the horizon, &c. The globe is nine inches and a half in diameter, and is supported

on a frame which elevates it about twenty inches from the ground.

Near this globe is a brass case, containing a figure, as large as life, of a Dirzee, or Hindu tailor, clothed in white flowing garments, and plying the needle: it is modelled in clay, and coloured to imitate the complexion of the Hindus. The ingenuity of an Indian artist is shown in an elaborately carved model of the Great Pagoda at Trivaloor, in Tanjore; and the rude knowledge of the arts of design among the same people is equally exemplified in a large drawing of the temple and car of Juggernauth, in which brilliant colouring is much more evident than correct perspective. Around the room are various idols, and drawings in Oriental style, illustrative of the religion and superstitions of the Asiatics. Among them is a Chinese "Emblem of Happiness," consisting of a figure of an enormously fat individual, whose little half-hidden eyes are redolent of self-satisfaction.

Two stands placed in this room support large models; the one, of the famed Car of Juggernauth, the object of a degrading superstition in the Eastern parts of India; and the other, of a Pagoda and Convent of priests at Canton. Of the latter we shall say a few words in our concluding paper.

Literary Sociality of the Time of James I.—Gifford has thus described the club at the Mermaid:—"About this time (1603) Jonson probably began to acquire that turn for conviviality for which he was afterwards noted. Sir Walter Raleigh, previously to his unfortunate engagement with the wretched Cobham and others, had instituted a meeting of *beaux esprits* at the Mermaid, a celebrated tavern in Friday Street. Of this club, which combined more talent and genius than ever met together before or since, our author was a member; and here for many years he regularly repaired with Shakspere, Beaumont, Fletcher, Selden, Cotton, Carew, Martin, Donne, and many others, whose names, even at this distant period, call up a mingled feeling of reverence and respect." Jonson has been accused of excess in wine; and certainly temperance was not the virtue of his age. Drummond, who puts down his conversations in a spirit of detraction, says, "Drink was the element in which he lived." Aubrey tells us "he would many times exceed in drink; Canary was his beloved liquor." And so he tells us himself, in his graceful poem 'Inviting a Friend to Supper:'—

"But that which most doth take my muse and me
Is a pure cup of rich Canary wine,
Which is the Mermaid's now, but shall be mine."

But the rich Canary was to be used, and not abused:—

"Of this we will sup free, but moderately;
Nor shall our cups make any guilty men:
But at our parting we will be as when
We *innocently met*. No simple word,
That shall be utter'd at our mirthful board,
Shall make us sad next morning, or affright
The liberty that we'll enjoy to-night."

This is not the *principle* of intemperance, at any rate; nor were the associates of Jonson at the Mermaid such as mere sensual gratification would have allied in that band of friendship. They were not such companions as the unhappy Robert Greene, whose genius was eaten up by his profligacy, describes himself to have lived amongst:—"His company were lightly the lewdest persons in the land, apt for pilfery, perjury, forgery, or any villany. Of these he knew the cast to cog at cards, cozen at dice; by these he learned the legerdemains of nips, foysts, conycatchers, crossbyters, lifts, high lawyers, and all the rabble of that unclean generation of vipers; and pithily could he point out their whole course of craft: so cunning was he in all crafts, as nothing rested in him almost but craftiness." This is an unhappy picture; and in that age, when the rewards of unprofessional scholars were few and uncertain, it is scarcely to be wondered that their morals sometimes yielded to their necessities. Jonson and Shakspere passed [illegible] the slough of the theatre without a stain. Their club [illegible] were not the feasts of the senses alone.—*London, No. X*[illegible]

Valley of Kashmir.—This valley is bounded on the southern side by gently rising declivities; the descent of Pir Panjâl is covered by the most luxuriant vegetation; and the eye rises gradually from the magnificent forms and colours of the ever-heightening hills, till it rests on the snowy peaks of the highest mountain-chain.* On this side, between the gently diminishing ranges of hills, lie greater and less valleys, in the centre of which flow the purest mountain-streams, which, higher upwards, form numerous cascades. This is the romantic district of Kashmir. From the little open plains, covered with southern vegetation, the traveller arrives on the banks of a river which winds through the deep fertile soil. The valley narrows the farther he advances, and the mountains approach each other more nearly the higher they become. The charms of the vegetable world are then more attractive to an European, as they develop themselves more closely allied to those of his distant fatherland. Apple, plum, and apricot trees, encircled by vines, here grow wild. Elms and willows conceal the banks of the river, the course of which may be traced by its murmuring over its rocky channel. White-thorn and spindle-trees (*euonymus*) surround wide-spreading maple and limes, or enormous chesnut-trees, under whose shade the lily and narcissus, larkspur and aconite blossom, together with the lilac and the rose. Nearer to its source the river changes into a foaming cataract, rushing over dark rocks. Here begins the region of the pines, from the majestic déodâr (the cedar of the Himalaya) to the fir and other varieties of that tribe. Still higher, the river divides into many streams, which flow through narrow gorges, and, lost in the white foam of the cataract, fall into the abyss below. Alpine plants, many species of rhododendron and daphne, here begin at the foot of the alder and birch, which bend beneath the weight of snow; and after these a strange vegetation, slightly elevated from the soil, appears on a plain already situated in the regions of eternal snow. Arrived on the height, the traveller sometimes treads firmly on the encrusted snow, sometimes clambering over uncovered stones; carefully ascertaining with his staff that the loose snow conceals no unseen precipice, he reaches one of the high peaks, where an incomparable view presents itself. To the south, on this side, the eye is directed to the bare and frowning precipices of the Pir Panjâl, and then far distant, over more than twenty valleys and mountain-ranges, to the plain of the Panj-âb, glowing in the golden mists of an Indian world. To the right and left lie snow-covered plains and hills, rising over each other in endless succession; and nothing is visible, for a much greater distance than the eye can discern, but the chill regions of eternal winter, various in form, yet dreary in its still monotony. The valley in a northern direction presents a charming contrast. The gently-declining hills guide the eye to the lower plain, which, covered by a rising vegetation, interspersed by groves and villages, divided by alleys and canals, gleams in the light of the morning sun. The Jélam flows proudly through the centre, its banks studded by towers, castles, and palaces. On the other side of the valley the mountains rise in bold forms—the snowy whiteness brings the highest point nearer to the eye than the lower declivities—the snowy hills there appearing to enclose the plain like a wall. Over these the previously-mentioned Jamâl rises nearly at each end of the valley; and the white and black double pyramid of the Mer and Ser, like a monument of creation when God divided the day and night. But on these heights, which rise more than fifteen thousand feet above the level of the sea, the first moment alone is agreeable. The air here is so rarefied, that a painful headache is the consequence even of a short stay, which, increasing every instant, lasts long after the descent to the plain. To the southern side of the valley of which we have spoken, the zoologist and botanist must direct his steps, either to discover new objects or to admire those already known in beauty never before witnessed. Here the thickest woods are mingled with open plains, and the traveller neither finds trees levelled by the axe, nor the countless flowers pressed by the footsteps of a living being. There absolute stillness reigns. The treasures of vegetation, the loveliest forms of nature are there prodigally amassed without an intelligent spirit to be gladdened by their beauty. The brook flows noiselessly along; no air rustles through the motionless leaves, and the deep silence is only broken by the sweet tones of the blue thrush, and of the bulbul (the nightingale of Kashmir). These approach man fearlessly, as in the days of Paradise, and are his faithful companions in his lonely pilgrimage. The deep fertile soil in the lateral valleys is uncultivated; the great plains in the principal one have been long sufficient for the nourishment of the population. The northern side of the valley under the hills of Thibet is very different from the south side already described.

the hills rise suddenly to a considerable height, offering an extensive field to the geologist. Few trees grow on this side, and the rivers form in their wide stony channels an unbroken cataract—the banks, similarly covered with stones rolled from their bed, are perfectly bare—hardly a blade of grass is to be found. Stones are heaped over stones; rocks piled on each other almost without vegetation. The ascent on this side of the hill is very difficult after the first few steps; the rocks consist of huge masses, the oblique direction of which in many places offers no secure footing to the steps of the traveller. The valley is hardly to be seen from the highest point, as it lies concealed by the first perpendicular mountain-range. Nothing is seen on all sides but snow-capped summits. I know of no prospect so melancholy as this is—no tree, no bird, no living thing is to be seen—a silence almost fearful reigns in these mountain fastnesses; and the name 'ran' (wilderness), which the natives bestow on these regions, is very applicable. On the heights below the highest peaks, close to the snow-line, saxifrage and juniper are found at a height of fifteen thousand feet; lower down, birch; then firs and pines occur. The mines of Kashmir lie on this side.—*Baron von Hugel, in Royal Geog. Journal,* vol. x., part iii.

THE CID.—No. XII.

The good Ximena had sent messengers to the princes of Aragon and Navarre, her sons-in-law, as well as to the other kinsmen of the Cid, inviting them to come and do his body honour. Alvar Fañez proposed that before they came the body should be put into a coffin, fastened down with nails of gold and covered with a purple pall; but Ximena would not listen to this, saying that his daughters would rather behold him as he was:

" 'My Cid hath still a beauteous visage,
And his eyes are nothing dim;
Whilst so fresh his body keepeth,
'Twere not meet to bury him.' "

As the procession drew nigh to Olmedo, it was met by the Cid's daughters and their husbands. All the Aragonese knights in their train had their shields hanging reversed at their saddle-bows, and were clad in black cloaks with the hoods rent, according to the Castilian fashion of deep mourning, while the ladies were arrayed in robes of black serge. They would have wailed, but Ximena withstood them, as the Cid himself had forbidden it. Doña Elvira and Doña Sol, with their royal husbands, approached the body of their father:

" Weeping sore, his hands they kissed,
Greatly marvelling at the sight;
For no dead man then he seemed,
But a live and stalwart knight."

All joined the procession as it continued on its way to San Pedro de Cardeña. Thither also came the good king Alfonso to do honour to the dead hero, and he commanded that the Cid's body should not be buried at once, but should be clad in rich vestments sent him by the Sultan, and be set hard by the altar, on the seat he had been wont to use, on a cushion of cloth of gold, with his own good sword Tizona in his hand. All this was done, and

" There it sat, within that chapel,
More than ten long years, I ween."

And a festival was held each year in honour of him, who " though dead, hath a name that ne'er will die."

On one of these yearly festivals, which were celebrated at San Pedro de Cardeña, whither multitudes flocked from every part of Castile, it chanced that a Jew entered the chapel at an hour when no one else was within its walls, as the abbot, by reason of the crowd, was preaching to the people without. There he beheld the Cid's body sitting upright on his seat, with his long white beard hanging down on his bosom, as though he were " endowed with great gravity and worthy of all reverence;" his left hand holding the scabbard of his sword, and his right the strings of his mantle. This august sight failed however to awe the unbeliever, and he said within himself, as he gazed on the dead warrior:

" 'Lo, the Cid! this is his body,
Who through all the world was fear'd.
I've heard say in his lifetime
None did ever touch his beard.

Come, methinks I now will pluck it—
Nought can harm me, now he's dead.
Forth his hand the Hebrew stretched,
As these impious words he said.

Ere the beard his fingers touched,
Lo, the silent man of death
Grasp'd the hilt, and drew Tizona
Full a span from out the sheath!

Deadly fear the Hebrew seized
When he did behold this sight—
Down he fell unto the earth
Well nigh lifeless with affright."

And there he was found by some of the congregation who entered the church. On recovering from his swoon, he recounted what had past, and gave thanks to God for that miracle, which wrought his immediate conversion to Christianity. He assumed the cowl in the same convent of Cardeña, and " there ended his days, like any other good Christian." But the Jew's word, if we may believe the Chronicle, was not the only voucher for this miracle; from that day forth the right hand of the dead Cid kept firm hold of the hilt of Tizona, so that his garments could no more be changed when dirty, as had been the wont before.

At the end of ten years, the tip of the Cid's nose dropped off; whereon the abbot and Gil Diaz thought it time for him to be interred, which was done accordingly in the same chapel; a deep pit being dug before the high altar, and his body being placed upright in it, on his own chair, as it had sat since his death.

Ximena and the faithful Gil Diaz spent the remainder of their lives in the convent of San Pedro, watching their lord's body; keeping vigils and singing masses for the benefit of his soul. Ximena died four years after him, but Gil Diaz lived many years longer. He carefully tended Babieca and took especial care that none should ever mount him who had carried the Cid for forty-two years; and that his race might not be lost, he made him the progenitor of the best breed of horses that ever existed in the realm of Spain. Babieca died two years after his master, and was buried by Gil Diaz before the gate of the monastery.

The remains of the Cid have several times been removed in the course of the seven centuries and a half which have elapsed since his death, the last time being by the French in 1809, to the Espolon or public promenade of Burgos, but in 1826 they were restored with great solemnity to their original resting-place in the convent of San Pedro de Cardeña.

In the centre of a small chapel called " the chapel of kings, counts, and illustrious men," now stands the monument containing the remains of our hero and " his wife so perfect, whom he loved as his own soul," as says the Poem. Their effigies in marble repose above, side by side. On a tablet below is a Latin inscription in doggerel hexameters, saying that " as Rome was honoured by the warlike deeds of her heroes, as King Arthur was the glory of the Britons, and Charlemagne of the French, so is Spain no less ennobled by her unconquered Cid." The walls of this chapel are thickly covered with painted escutcheons, to each of

[illegible] some name is attached, serving as the epitaph of the person whose remains lie enclosed in the wall at that spot. Here you read the name of the Cid's great ancestor, Lain Calvo, the first judge of Castile; of his father Diego Lainez, and [illegible]— of the proud Count of Gormaz, who fell by his maiden sword. Here are also interred [illegible] daughters Elvira and Sol, together with [illegible] of Navarre and Aragon; and [illegible] son Diego Rodriguez, of whom [illegible] mention is made by the romances, but who died [illegible] fighting by his father's side against the Moors of Consuegra. Here also lies the dust of the Cid's brave companions in arms—of [illegible] his first cousin, whom he was wont to call [illegible] arm, his better arm;" of Martin Antolinez, Pedro Bermudez, and Ordoño, his nephews; of Martin Pelaez, the Asturian; and of others of his captains whose names we have not recorded.

Over the [illegible] entrance to the convent is a mounted figure of the Cid, larger than life, and painted striking [illegible] to the ground beneath the feet of Babieca. [illegible] sadly mutilated during the War of Independence. Since the suppression of the monastic orders in Spain in 1836, the convent has been uninhabited [illegible] man who keeps it in order, and who, happily for the visitor, is deeply read in the Cid's history. [illegible] about six or seven miles to the east of Burgos, in the midst of a bleak and dreary country, but which [illegible] unfertile, as it is in many parts covered with [illegible]. The village of Bivar lies about the same distance to the north of Burgos. We did not visit it when [illegible] that city, but heard that some remains of the Cid's castle are still standing. The site of the house in Burgos in which the Cid was born is marked by three [illegible] bearing escutcheons and a commemorative inscription, which informs us that "these monuments were raised on the antient ruins of his family [illegible] year 1784." This, and the chest already [illegible] preserved in the cathedral, are, we believe, the only relics pertaining to the Cid now to be seen in Burgos; but we must not forget that his statue [illegible] a prominent place as "the dread and terror of the Moors," in the quaint gateway of Santa Maria, erected by Charles V. to the memory of the heroes of Burgos.

It may be remembered by the readers of 'Don Quixote' that the Manchegan knight speaks of Babieca's saddle being preserved in the Royal Armoury at Madrid. We were there a few months since, but saw no such saddle; only the suit of armour mentioned in a former article as belonging to the Cid, but which is evidently of later date by several centuries; and a sword which is called Colada, but of which, judging from the hilt, we think the same may be said. We had no opportunity of examining it, but Southey states that on one side of the blade is graven, "Yes, yes," on the other, "No, No." "Tizona," according to the same authority, "is an heir-loom in the family of the Marquis of Falces." On one side of the blade is engraved, "I am Tizona, made in era 1040," *i.e.* A.D. 1002; on the other, "Hail, Mary, full of grace!"

In concluding our sketch of the Cid's history, we must state our regret that the necessity we have all along felt of curtailing and condensing our matter as much as possible, has prevented us from dealing with the subject as it deserved. Yet we think our readers will allow that these ballads of the Cid, though seen through the medium of our defective translation, are far from deserving the sweeping condemnation of Dr. Southey, that "the greater part of them are utterly worthless." Among the nearly two hundred which are extant, there are certainly some of little value or interest, but we are satisfied that few who read them in the original will allow that this is characteristic of the mass, and that not a few will say, with Mr. Lockhart, that they have derived great pleasure from the perusal. In fact, those only who so read them can adequately admire them, for, to adopt the words of a modern critic on the early poetry of Spain, "Spanish literature is of all others that which can be least appreciated by extracts or translations. Its excellence consists not in insulated beauties, but in that noble national spirit which, like a great connecting principle, pervades and harmonises the whole."





[a, Pea Cock; b, Turkey; c, Dorking Cock and Hen; d, Guinea Fowl; e, Hamburg Cock; f, Game Cock and Hen; g, Bantam Cock and Hen.]

DOMESTIC POULTRY.

The feathered tenants of the farm-yard, reclaimed from their aboriginal state of independence, and pensioners on our bounty, are peculiarly interesting. Though less decidedly important than the sheep, the ox, or the horse, they still rank among the useful; their flesh and eggs are esteemed as wholesome and delicate food, and most are remarkable for grace and beauty. In London and other large towns both here and on the Continent, extensive markets for the sale of poultry, almost exclusively, are established, and the poulterer and the egg-salesman carry on a lucrative business. The general demand for the flesh and eggs of poultry acts beneficially upon the small farmer, and renders their rearing profitable. Certain districts indeed are celebrated for the superior value of their feathered produce; we have all heard of Dorking fowls and Norfolk turkeys.

The domestic birds, which "gather round our door,"

belong to two distinct groups, the gallinaceous or rasorial, and the swimming or natatorial orders. The pigeon perhaps may be excepted; for though placed by some naturalists in the former order, it seems to occupy a station "per se," between the insessorial order of Vigors and the true gallinaceous birds.

To the gallinaceous order belong the fowl, the turkey, the guinea-fowl, the pea-fowl, the pheasant, &c., and to some of these we shall here direct attention.

Of all our domestic birds, the common fowl appears to have been the longest reclaimed, and is the most extensively spread. It has ramified into numerous varieties, a circumstance which attests not only the antiquity but the completeness of its subjugation. This bird is of Indian origin; the wild stock whence it has descended is, no doubt, the common Indian jungle-fowl (*Gallus Bankivus*), which interbreeds freely with the common domestic race, and has been crossed with some of the game breeds for the purpose of keeping up the spirit and vigour of the stock.

The circumstances attendant upon the primeval domestication and spread of the common fowl are buried in obscurity, nor know we at what period it became naturalized in our island. Its introduction, however, must have been at a remote epoch, as we find it among the things prohibited by the Druids as food. Allusions to the common fowl are abundant in the earliest writings, and we know that the ancient Greeks, on whose medals its figure is often seen, valued it for its pugnacious disposition and its prowess. Cock-fighting was one of their diversions, and the breeds most in repute were those of Rhodes and Tanagra in Bœotia. Distinguished breeds were found also in Eubœa, Media, and Persia, as well as in Egypt.

The Romans, whose taste for sanguinary spectacles is notorious, were extremely partial to the amusement of cock-fighting, and trained birds for the purpose. Indeed the taste for this cruel sport seems to be very general: the Mussulman natives of India are greatly addicted to it, and one species of jungle-fowl, called Sonnerat's jungle-fowl (*Gallus Sonneratii*), is in high request; this bird, though smaller than the domestic breed, is superior in spirit and endurance, and usually proves victorious in the combat. The Chinese are devoted to the sport; and the natives of Sumatra enter into it with so much ardour, that instances, as it is said, have occurred of men staking not only their goods and money, but even their children on the issue of a battle.

In England the same taste long prevailed, but happily the practice, more honoured in the breach than the observance, is now greatly on the decline, if not obsolete; it is indeed incompatible with the diffusion of knowledge, the tendency of which is to humanize mankind, and lead the mind from sordid and debasing pursuits to sources of intellectual enjoyment. The common fowl is a hardy bird, and capable of enduring considerable severity of cold; hence its extensive distribution in a domestic state. The warmer and temperate latitudes, however, are most congenial to it; in the high northern regions it cannot be kept without difficulty, and therefore is not general in the bleak realms of Siberia, indeed it is found not to breed.

Besides the game race, which approaches the nearest in character to the wild stock, several varieties exist in our island. One, the Friesland, has the feathers curled back, the plumage having a ruffled and by no means agreeable appearance. Another breed is destitute not only of tail feathers, but also of the tail itself. Some breeds have the comb greatly developed, in others it is small, and its place is usurped by a tuft of feathers. Dorking is celebrated for a large and delicately flavoured variety, distinguished by having five toes on each leg, the hind toe being doubled. The Poland, the Spanish, and the Hamburg breeds are also excellent. A small breed of fowls, termed the Bantam (originally from Java), is very beautiful. The old Bantam fowls, which are not much larger than a partridge, are feathered to the toes, the tarsi having long stiff feathers down them; there is a small variety, however, with clean legs and an elegantly spangled plumage, much in request. To the naturalist these varieties have little interest, excepting as far as they afford evidences of the effects which the agency of climate, diet, and long domestication can produce in the modification of external characters.

In Egypt the plan of hatching chickens by means of artificial heat has long been in operation. The eggs are placed by hundred in ovens, or rather, small chambers, the temperature of which is regulated with great nicety. At the time of hatching, people come from all quarters to purchase the young poultry, which require but little trouble in rearing. In the 'Penny Magazine' for 1833, p. 311, some interesting details will be found relative to the process. The Eccaleobion, in London, is the same in principle as the egg-ovens of Berme in Egypt; it is established not for the purpose of supplying the markets with fowls, but for the sake of exhibiting to the curious the "art and mystery" of artificial incubation. The chickens which we have seen called into life by this process have appeared to us to be more weakly than those hatched according to the natural mode; one reason may be their want of the fostering care of the hen, which, from the time of the exclusion of her brood from the egg, gathers them under her wings, and defends them from cold and wind, while at the same time they have the benefit of the fresh air of the open farm-yard.

Another splendid bird, the ornament of the pleasure-ground, is the pea-fowl (*Pavo cristatus*). This magnificent bird is a native of India. It is common in many districts, and abounds in the jungles along the banks of the Ganges, in the forests of the Jungleterry and Baughulpore districts, and in the dense woods of the Ghauts. When taken young, it is easily domesticated, and many Hindoo temples in the Deckhan have considerable flocks attached to them. The pea-fowl, which need not be described in detail, was known to the ancients. We find it noticed in the Scriptures as being one of the importations from India in the time of Solomon, and a forcible allusion to the splendour of its plumes is made in the book of Job.

Alexander the Great, who obtained this bird during his Indian expedition, appears to have introduced it into Greece, and subsequently it has spread through the greater portion of Europe.

To the Romans it was very familiar; and indeed must have been common in Italy at an early period. Admired as the peacock was, its beauty did not protect it from slaughter, for it was killed to add to the delicacies of the tables of the great and luxurious; and its brain, together with the tongues of flamingos, entered into the composition of a favourite dish of the emperor Vitellius.

In our country, a roasted pea-fowl, served up with the plumes attached to it, swelled the rude pomp of a baron's entertainment.

The pea-fowl is restless and wandering in its habits, and cannot well be kept in a small space; it perches or roosts by preference on the topmost branches of trees, and indeed is fond of any elevated situation. It seeks its food, however, and also constructs its nest on the ground. In its wild state, it chooses a retired spot, among close brushwood, as the place of incubation, making an inartificial nest of sticks, twigs, and leaves: the eggs are from twelve to fifteen in number. In domestication its habits are the same; indeed domestication has effected but little alteration in these points; nor has it degenerated into numerous varieties. White

peacocks, it is true, are sometimes to be seen, and imperfectly coloured birds are not uncommon, but here the changes terminate.

The beautiful plumes of this bird are usually called its tail, and by many are supposed to be so; this, however, is not the case: the plumes of the peacock, which are not developed till the third year, are its tail-coverts; they overhang and conceal the true tail-feathers, which are short, but which may be easily seen when the plumes are elevated.

A peacock in full plumage, proudly stalking with his train elevated, is indeed a magnificent object; well might the satirical poet write—

> "Miraris quoties gemmantes explicat alas
> Et potes hunc, sævo tradere, dure, coquo?"

Like most of our domestic poultry, the pea-fowl adds insects, larvæ, and worms to the ordinary grain which forms the staple of its diet; it will also devour lizards and small snakes.

The female or pea-hen is a plain bird compared to her mate; she is destitute of his "gemmy train."

The peacock has not the pugnacity of the game-cock; we have, however, seen it give battle to a small dog, and come off the victor; and have known it also attack persons very resolutely; a friend of the writer's had his lip completely cut open by a blow of the spur of one of these birds, which he had teased till it became enraged. The loud harsh cry of this bird is well known. A second species of pea-fowl found in Java (*Pavo Javanicus*) has been recently introduced to our country. It differs from the common bird in having its crest composed of long slender and equally-barbed feathers. The feathers of the head and neck, instead of being silky, are broad, short, rounded, and imbricate like the scales of a fish; their colour is metallic green, with a lighter margin.

The Guinea-fowl or Pintado (*Numida Meleagris*), as its name indicates, is originally from Africa. It was known to the ancient Greeks and Romans, and received from the former the name of meleagris. According to the ancient fable, the sisters of Meleager, mourning the death of their brother, were turned into birds called Meleagrides (in the singular Meleagris), having their feathers sprinkled with tear-drops. The term meleagris, however, strange to say, has been transferred by Belon, Gesner, Aldrovandus, and others, to the turkey, a native of America, and of which the ancients had no information. Their mistake in supposing the turkey to be the meleagris of the Greeks is unaccountable, for the turkey was unknown in Europe until the beginning of the sixteenth century. Oviedo, in 1526, describes it as domesticated in the islands and the Spanish main; and in 1541 it obtained a place in our country among the delicacies of the table. The guinea-fowl is noticed by Aristotle, by Pliny, by Varro ('De Re Rusticâ'), and by Columella, a writer on husbandry in the reign of Claudius Cæsar, and by others. According to Athenæus the Ætolians first introduced this bird into Greece; but though it must have been naturalized there, it does not appear to have spread very widely. In the middle ages we lose all trace of it, no writers of those times appear to notice it, nor can we distinctly point out the period of its introduction into the British Isles. This, however, must be recent comparatively; its name does not occur in the list of birds in the famous feast of Archbishop Nevill, in the reign of Edward IV.; nor does it appear in the Duke of Northumberland's Household-Book, 1512; nor yet in the Household-Book of Henry VIII. Yet, in all these lists, the peion, or peacock, makes a conspicuous figure.

In the early part of the eighteenth century the guinea-fowl was tolerably common in England, and is now completely naturalized.

Adanson, Dampier, Le Vaillant, and other travellers in Africa, have observed the wild guinea-fowl in different parts of that continent; but, as about five species are known, we cannot be certain which of them is intended.

The common guinea-fowl (*Numida Meleagris*) appears to be dispersed through an extensive range of Africa, frequenting low humid situations, and the banks of rivers and marshes. It is eminently gregarious, assembling in large flocks, which wander about during the day in search of food; as evening approaches they seek the branches of trees, and roost crowded together. In its rapid mode of running, and in its short flight when forced to take wing, we are reminded of the partridge, which it also somewhat resembles in the contour of its body.

A wild race of these birds is found in St. Domingo and others of the West India Islands; this race is said to have been imported from Guinea.

In a domestic condition, the guinea-fowl retains almost unaltered its original habits; it is restless, addicted to wandering, and impatient of restraint. It will stray for miles from the farm to which it belongs, and it often happens that a long-missed female will make her appearance with a young brood attending her. In close confinement the female rarely hatches her eggs; the want of freedom interfering with her instincts: few birds indeed are more recluse and shy during the time of incubation, or more cautious in concealing their nests. It is generally made among dense brushwood or in similar retreats. The number of eggs varies from twelve to twenty. They are smaller than those of the fowl, of a pale yellowish red, minutely dotted with darker points. Both the eggs and flesh of the guinea-fowl are excellent. Cream-coloured guinea-fowls are sometimes to be seen; in these the white spots are still to be distinguished. Another variety has a white breast, and the general colouring destitute of the richness which renders the wild and the undegenerate domestic race so attractive. The shrill querulous notes of this bird, which it perpetually repeats, are very disagreeable. The guinea-fowl has not yet reached the colder latitudes of Europe; it is not mentioned by Linnæus in his Swedish Fauna; and it is said that neither Denmark, Norway, nor Northern Russia possesses it.

Of our domestic gallinaceous birds, we have found that two are derived from India and one from Africa; we have, however, one from America, namely the turkey (*Meleagris Gallopavo*).

To the misappropriation of the term meleagris to the turkey we have already alluded: the mistake, however cannot now be remedied, naturalists having universally adopted the word as the generic title of the bird in question.

The turkey was once very extensively spread in a wild condition in America; at no distant period it was found in the woods, from the northern limits of the United States to the Isthmus of Panama; but at present, in consequence of the spread of European colonization and the destruction of the forests, its range has become circumscribed. Its chief places of abode are the as yet uncleared wooded tracts along the Mississippi and the Missouri, the unsettled parts of the states of Ohio, Kentucky, Illinois, and Indiana, Georgia and the Carolinas. Every day, however, it is becoming scarcer, and its territories more limited.

The wild turkey is gregarious, but the adult males and females are in separate flocks; the young associate with the females, and continue with her till the ensuing spring. In October these flocks make extensive migrations, deserting some districts and advancing to others, which they throng, having often crossed rivers in their passage. These migratory movements are

undertaken solely in quest of an abundant supply of food, which consists of forest fruits, termed indiscriminately *mast* in America. Their mode of crossing a river is singular; it would appear as if the flock were aware of the difficulty of the undertaking; they betake themselves to the highest eminences, and there remain for a day or two; the males are then heard gobbling and calling, and may be seen strutting about, as if to raise their courage to the sticking-place in the impending trial. When the weather seems favourable for the attempt, they all mount the tops of the highest trees, and, at a signal note, wing their way towards the opposite shore. The old birds easily get over, should the river be even a mile in breadth; but the young, or less robust, frequently fall into the water. Here, however, they are not drowned, they bring their wings close to their body, expand the tail as a support, stretch forward their neck, and strike vigorously with their legs, and thus make way with considerable expedition. From this we may conclude that the powers of flight which even the wild turkey possesses are but trifling compared with those of other birds: in fact their migrations are performed on foot, and unless their way be interrupted by a river, or the dog of the hunter force them, they never take wing; at night they roost in flocks on the branches of trees, and are then often harassed by some of the larger species of owl, to the attacks of which they occasionally fall a sacrifice.

It would appear to have been shortly after the subjugation of Mexico by the Spaniards, that the reclaimed turkey was introduced into Europe. Mexico was discovered by Grijalva in 1518. In 1541 the turkey ranked among the dainties of the table in our country; and Archbishop Cranmer (Leland's 'Collectanea'), in a regulation respecting festivals, ordered that of cranes, swans, and turkey-cocks there should be but one dish.

Tusser, in his 'Five Hundred Points of Good Husbandry' (1573), accounts the turkey as part of the farmer's Christmas fare.

Though we can thus arrive at certain data which lead us to place the introduction of the turkey into Europe about the year 1520, or within ten years afterwards, we are unable to learn the details of its domestication. Probably the Spaniards found it already domesticated in Mexico; if so, they have neglected to record it. The appellation of turkey, which we give to this bird, originated, according to Willughby, from the supposition that it was brought from the country of that name; a statement, if correct, which shows how easily errors arise, and how they spread. It is perhaps from the prevalence of this false opinion (namely, that the turkey came from the Levant), that Belon, Gesner, and others regarded it as the meleagris of the Greeks, the guinea-fowl, or true meleagris, being in their day very scarce in Europe.

The turkey is one of the most valuable of our domestic birds, its flesh being in high esteem. Like the pea-fowl and guinea-fowl, it is addicted to wandering, and delights to range over large fields and parks, its innate habits remaining but little affected by reclamation. In size and beauty it is perhaps inferior to its free-born relatives in their natural climate; yet we have seen many quite equal in the splendour of their plumage and in weight to the specimens of wild birds which have come under our notice. These, it must be observed, vary greatly in size. Audubon states that the males weigh from fifteen to eighteen pounds, and occasionally twenty, twenty-five, or even thirty pounds. The male turkey is three years in acquiring his full plumage, and continues to increase in size for a year or two more.

A detailed description of this fine bird is superfluous; its colours,—its carunculated neck,—its proud gait,—its habits and manners, are familiar to all.

The plate represents the domestic fowl, as displayed by four varieties (the game, the Hamburg, the Dorking, and the Bantam); the peacock; the guinea-fowl; and the turkey.

Noxious Plants useful.—Every production of nature is good in its kind; and if anything is found to be noxious, it is because we do not make a proper use of it. Hence it happens, that what preserves the life of one animal, occasions the death of another; and the same plant which in certain circumstances is regarded as poisonous, in others is highly useful and salutary. Hemlock, for example, was formerly considered as a deadly poison; but it is now employed in many cases as a medicine with considerable success, and without producing any bad consequences. The number and diversity of vegetables growing upon the earth is prodigious, and we must not imagine they were all created for the use of man; some are designed for beasts, some to exhale grateful odours, and others are useful in many of the diseases to which the animal economy is subjected. The same thing holds good with regard to many living creatures, which, though very dangerous to man, are useful to other animals, as affording food or medicaments. Many birds feed upon insects which are considered as noxious: domestic fowls are fond of spiders; peacocks and storks will feed upon serpents. Some of the most efficacious medicines are composed of the most poisonous herbs. The number of plants and animals of a poisonous or venomous nature is very considerable, compared with that of those which are evidently useful and beneficial; and both men and animals have a natural repugnancy and aversion for everything which is hurtful or prejudicial to their nature.—*Sturm's Reflections.*

Great Cataract of Alata on the Nile.—Two hours (six miles) from Denbas, we crossed the little river Alata, which here, flowing from north-north-east, discharges its waters into the Abăi (Nile), three-quarters of an hour (two miles) west of the bridge. Passing through a tract continually becoming more wild and rocky, we at length, after travelling for three-quarters of an hour farther, reached the bridge of Deldaï [Deldaï, which the traveller took for a proper name, signifies "the bridge"], which is a highly singular and striking object. Through a narrow cleft in the rock, more than sixty feet deep, the perpendicular sides of which are in many places scarcely two fathoms asunder, the Nile here flowing to the south-east, rushes down through an uninterrupted series of foaming cascades. . . . The bridge consists of eight arches, of different sizes, of which the northernmost, by much the largest of all, crosses the cleft, and is therefore the only one beneath which the river always passes. The length of the bridge is ninety paces (one hundred and fifty yards), and its breadth fifteen feet (five yards). It is not straight, and is crossed in the middle by a wall, in which there is a gate: at its northern end there is a kind of watch-tower, now in ruins. All the stone-work of the bridge consists of lava, except the arching, which is formed of hewn sandstone. The hills lying immediately over the banks of the river are wild, rent masses of volcanic rock, partly overgrown with large trees and rampant shrubs. About one hundred feet to the west of the bridge, the upper edges of the rift in the rock, which forms the proper bed of the stream, approach each other to within about nine feet; and I was assured that the distance was often cleared by a bold leap. How far the foaming cascades extend eastwards I could neither ascertain by my own observation nor learn by any satisfactory report from the natives. To the west a chain of similar waterfalls continues for about a quarter of an hour (one mile); between which and the lake Tzana the river is said to cut its way, in a serpentine course, through rich meadow-ground. At the commencement of the cascades to the east, there is a small island, with the convent of Abû Kedam, near which the great waterfall described by Bruce (vol. v., p. 105) must be sought, according to him, about half an English mile above the bridge.—*Ruppell's Travels in Abyssinia, in Royal Geog. Journal.*



[Scene on the Danube.]

THE DANUBE.

Mr. Planche, in his interesting work, 'The Descent of the Danube,' expresses his surprise "that while our print-shops teem with views on the Rhine, and the shelves of our booksellers groan with the weight of tours in its neighbourhood, no English pen or pencil should have been hitherto employed in illustration of the magnificent Danube," that river "whose waves have witnessed the march of Attila, of Charlemagne, of Gustavus Adolphus, and Napoleon; whose shores have echoed the blast of the Roman trumpet, the hymn of the pilgrim of the Cross, and the wild halloo of the sons of Islam; whose name is equally dear to history and fable;" and we may add, whose scenery in different parts of its course is unrivalled by that of any other of the great rivers of Europe for grandeur and sublimity. The neglect, which Mr. Planché was the first to remedy, has doubtless been caused in a great measure by the length of time required for an English visitor to make himself acquainted with the Danube, not merely from its distance or its length, but from the want of those facilities for navigation which the more favoured Rhine offers to the traveller. A great improvement however has taken place of late years. Steam-boats now navigate most if not all of the navigable parts. Artists and writers begin to avail themselves of the comparatively novel track thus opened to them, and before long we may expect to find the scenery, the history, and the traditions of the "thundering river" as familiar to us all, as those of the Rhine are at present.

The Danube, called by the Germans Donau, and by the Hungarians and Turks Duna, is generally supposed to derive its appellation from the word *donner*, thunder, though several other derivations not here worth mentioning are advanced by respectable authorities. It rises on the eastern declivity of the Black Forest, in the kingdom of Würtemberg, in Western Germany, and only about twenty-four miles from the banks of its great rival the Rhine. It here forms a mountain-torrent, known under the name of Breghe. Near a place called Danaueshingen it is joined by another mountain-stream; and from thence the united waters bear the name of the Donau, or Danube. In its entire course, calculated to measure not less than 1770 miles, it passes through the kingdoms of Würtemberg, Bavaria, in which territory it receives no less than thirty-eight tributaries, Austria, and Wallachia in Turkey, to the Black Sea, which it reaches by eight several mouths. The surface of territory drained by the Danube, and the numerous rivers which flow into it, probably exceeds three hundred thousand square miles. Having made these preliminary observations, we shall now follow the course of the Danube from its source to the sea, describing by the way, so far as our space will admit, all the more particular objects of interest presented on its banks. For this purpose the works of Mr. Planché, Mr. Quin,* and other writers, will

* 'A Steam Voyage down the Danube,' 1836.

furnish ample materials. From Danaueshingen the general course of the Danube is at first towards the east, but afterwards it declines to the north-east, in which direction it continues till it reaches Ratisbon. Between these places it flows within about two miles of Ulm, the scene of the surrender of the Austrian army, twenty thousand strong, under General Mack, to Napoleon, on the 17th of October, 1805, and directly past Günzberg; Hochstädt, near which is Blenheim, the spot made for ever memorable by Marlborough's great victory over the French and Bavarian forces commanded by Marshal Tallard; Donauwörth; Neuberg, an important town, formerly the capital of the ancient principality of the same name; and Ingolstadt, the most important fortress of Bavaria prior to the destruction of the works by the French in 1800, and which promises again to obtain its ancient repute, many thousand men having been employed for some years in erecting the necessary fortifications. At Ulm the Danube first becomes navigable for barges. Before entering the great plain of Bavaria at Donauwörth, the river runs for the chief part of its course along the southern base of the dry and barren table-land called the Rauhe Alp, which rises two thousand feet above the level of the Danube. Numerous offsets from the Alps approach the river, forming hills of moderate elevation with gentle declivities, and enclosing charming and fertile valleys. In its way through the great plain we have mentioned, many objects of interest meet the eye of the spectator. At Ratisbon, or Regensburg, seated on the river Regen, which here joins the Danube, we find the Regina Castra of the Romans, forming in their time one of the chief towns on the frontiers of Illyria, and a place of considerable importance to the Roman merchant for the furs which he here purchased. Its history is full of important events, as may be easily credited when we state that in the course of nine hundred years it has been visited with all the horrors of warfare no less than fourteen times; the last being the siege of 1809, when, after a desperate assault, it was taken by the French. But to an Englishman the most deeply interesting recollection of Ratisbon is that connected with our Richard Cœur-de-Lion, who was here delivered up to the emperor Henry VI. by Leopold, duke of Austria, in pursuance of the disgraceful bargain which had been concluded between them. From Ratisbon he was conducted to one of the emperor's castles in the Tyrol, loaded with chains, and guarded night and day by trusty soldiers. The river here forms two small islands, called Oberwörth and Niederwörth, which are laid out in agreeable walks, and connected with each other and with the town by a stone bridge twenty-three feet wide and nearly eleven hundred feet long, built in the twelfth century.

Near Ratisbon is a monument to Kepler, who was born here; and on a rock on the banks of the Danube is a marble temple erected in honour of the great men of Germany. The river in this part is about eleven feet deep, and "something broader than the Thames at Putney." The right bank of the river, nearly all the way to Straubing, is "low, sedgy, and Dutch-like;"* but on the left bank a bold range of mountains follows the windings of the stream almost the whole way to Vienna. The ruins of the castle of Donaustauf, "cresting a round bluff rock," with the little town at its foot, still speak of their ancient strength, and, as Mr. Planché remarks, of the "battles, sieges, fortunes *it hath* past." This formerly belonged to the see of Regensburg, and was the residence of its bishops, among whom we find Albertus Magnus. This eminent philosopher resided here about 1260, and as his studies were of a similar nature to those of our own "Friar Bacon," his contemporary, so too was he looked upon by the ignorant people as a magician and sorcerer. The speaking brazen head has been attributed to both; but in the power of being at one and the same time in two places, Albertus has the sole honour. "It is asserted that at the very moment he was holding forth to his attentive pupils from the chair still exhibited in the chapel (of the Dominicans at Ratisbon), he was to be seen busily employed in his study at Donaustauf, about twelve miles off."

Leaving Donaustauf, we pass, among numerous other villages, Bach, celebrated for the mines in its neighbourhood, which stands on the left bank; and the palace of Wörth, which, though long visible before it is reached, at one time appears behind us, so extraordinary are the sinuosities of the river. Not one of the least interesting features of the Danube are the peasantry who appear on its banks. In the district through which we are now passing they are wealthy, "exceedingly proud, and fond of all kinds of finery. The finest Swiss and Dutch linen, silk and satin kerchiefs of the gayest hues, Brabant lace, and gold and silver stuffs of all descriptions are in constant requisition. The men wear gold rings, and generally two gold watches. The black velvet or embroidered silk boddices of the women are laced with massive silver chains, from which hang a profusion of gold and silver trinkets, hearts, crosses, coins, medals," &c. At Sossau, on the left bank, is a far-famed picture of the Virgin, brought hither, if we may believe the monkish traditions, by angels in a boat from some heretical village where the Lutheran doctrines had suddenly appeared. Straubing, the first place of any importance on the Danube after quitting Ratisbon, like most of the large and ancient towns of Germany, is remarkable for the sieges it has undergone. At one of these the citizens defended their town against the Duke of Saxe-Weimar with a courage and ability worthy of note. The burgomaster Haller, who was an excellent marksman, on this occasion slew no less than thirty of the duke's officers from his position on the ramparts. A deeply affecting memory is attached to Straubing. In a small chapel in the churchyard of St. Peter's is a red marble tablet with an effigy, and the following (translated) inscription:—"In the year of our Lord 1436, on the 12th day of October, died Agnes Bernauer. May she rest in peace!" The story of this unfortunate lady may be thus briefly narrated:—Albert, the only son of Duke Ernst of Bavaria, one of the most valiant and accomplished princes of his age, was affianced to the Countess Elizabeth of Würtemberg, and the marriage was just about to take place, when, at a grand tournament given in honour of the occasion at Augsburg, he beheld Agnes Bernauer, "the angel," as she was called among the citizens, and with whom he became passionately in love. At the same time news was brought to him that the Countess Elizabeth had eloped with a more favoured lover. The prince, regardless of the difference between his rank and that of Agnes, whose father was a bather, an employment then looked on as disreputable in Germany, wooed and in secret married her. The consequences were truly deplorable. The prince's father and family strove to compel him to sign a divorce, and when that attempt failed, the unfortunate Agnes found her ruin only the more surely accomplished by insidious attacks on her fair fame and character. The authorities of Straubing, near which place the prince and his lady resided, seizing the opportunity afforded by Albert's absence for a short time from his palace, arrested Agnes on some frivolous pretext, and when, with an honest indignation, she asserted her innocence, they declared her guilty of trea-

* 'Descent of the Danube,' p. 22; from which work the quotations in this part of our description are taken, unless otherwise expressed.

son, and condemned her to death. On the 12th of October, 1436, she was accordingly thrown from the bridge of Straubing into the water; and although she succeeded in freeing one foot from her bonds, and strove, while shrieking for help and mercy, to gain the opposite bank, one of her pitiless executioners caught her long fair hair with a hooked pole, and dragged her back into the stream till all resistance ceased! The horror-stricken husband at first set no bounds to his fury. He obtained an army from his father's bitterest enemy, with which he returned to punish the murderers of his beloved Agnes. The emperor Sigismund now interfered, who at last pacified the prince, and reconciled him with his father; who, to attest his contrition, instituted a perpetual mass for the soul of the deceased lady.

The boats used in the navigation of the Danube are mostly of one shape, though differing in size, and known by various appellations. They are little better than large flat-bottomed punts, ranging from about 40 to nearly 150 feet long, and composed generally of planks nailed rudely together, with a kind of hut in or near the centre. "Sails are unknown on the Danube;" they are therefore rowed by two or more hands according to the size of the boat, by means of long clumsy paddles tied to upright posts, on which water is frequently thrown to prevent ignition. The largest boats, in ascending the river, are towed four or five together by a long string of horses. Both drivers and boatmen have customs and modes of thought and feeling peculiar to themselves. The former are in appearance "something between the English dustman and drayman; but the lowest of either of these worthies might pass for a scholar and a gentleman by the side of one of them. From the moment the Danube becomes navigable, till it is again chained up in ice, these fellows never enter the humblest hovel, or mix with men of other callings, but even sleep upon the the river's bank beside their horses. A miserable superstition exists amongst them. They believe that some of their number must every year be sacrificed to the Spirit of the Waters; and consequently, when an accident occurs, they all scramble for the drowning man's hat, but never think of stretching out a finger to save him, whom they look upon as a doomed and demanded victim. Professor Schultes declares that he once saw five drivers with their horses precipitated into the river, when their companions hastily cut the ropes to prevent the rest of the team from following, and drove on, leaving the poor wretches to their fate." The boatmen by whose side the drivers move along day by day for so great a portion of the year are a very different race of men, and present one characteristic at least of an interesting and poetical nature. Mr. Planché one night, being unable to sleep in the "hut," got up, and seating himself by the cabin-door, as the moon was rising, "listened to the songs of the boatmen, who, as they lazily plied their unwieldy paddles, warbled in their own peculiar style—a style rendered familiar to London ears by the interesting 'Rainer family,' for it is not confined to the Tyrol—several wild but pleasing melodies. It is very provoking," he adds, "that the English should be perhaps the only people who have no idea of singing in parts; an untutored boatman, peasant, or soldier of almost any of the continental nations, will suddenly strike in with an extemporary and very creditable bass, though the air be led off by an utter stranger to him. On the banks of the Main at Aschaffenburg, and at the Möhdling in the Wienerwald, I was particularly struck with this pleasing talent, and have noticed it repeatedly both in France and Switzerland."

(To be continued.)

THE ROYAL ASIATIC SOCIETY'S MUSEUM.

[Concluded from page 324.]

The Pagoda and convent of priests at Canton, a model of which in the Museum we alluded to in the last paper, was, we believe, the place in which the embassies under Lord Macartney and Lord Amherst were accommodated during their sojourn in Canton. Lord Macartney, in his private journal of the embassy, says: "Our quarters are on an island, opposite to the English factory, which is situated on the mainland in the suburbs of the city of Canton. The river that divides us is about half a mile broad. These quarters consist of several pavilions or separate buildings, very spacious and convenient, and some of them fitted up in the English manner, with glass windows and fire-grates; which latter, at this season, although we are on the edge of the tropic, are very comfortable pieces of furniture. Our habitations are in the midst of a large garden, adorned with ponds and parterres, and with flowers, trees, and shrubs, curious either from rarity or beauty. On one side of us is a magnificent *miao*, or Bonze temple, and on the other a large edifice, from the top of which is a very fine view of the river and shipping, the city and country, to a great extent."

We now ascend to the upper rooms of the Museum; in the first of which, on the left-hand side, we find fragments of stone, tombs, gravestones, and images, engraved or sculptured with hieroglyphics and characters in various Oriental languages: many of these inscriptions have been deciphered, and translations of them given in the 'Transactions' of the Society; such being one of the features, and a very valuable one, for which the Society was founded. On the adjacent side of the room, between the windows, are a few objects connected with natural history, such as a trunk of bamboo, the skeleton of the head of a Malacca elephant, a collection of the hanging nests of the Indian grosbeak, &c. There are also some Buddhic idols; three or four models of canoes used by various Indian tribes; and a pair of enormous 'dumb-bells,' employed as a means of muscular exercise by the Indians. These latter consist of two heavy pieces of wood, about thirty inches in length, diminishing in thickness from the bottom, where they are about seven inches in diameter, to the top, which forms a handle: the swinging of these implements must require no small amount of muscular force.

The right-hand side of the room is chiefly occupied with animal specimens, such as the horns and bones of a buffalo and a tapir; stuffed skins of crocodiles and alligators; the jaw-bones and vertebræ of a shark; the 'saw' of a saw-fish; the stuffed skin of a short-tailed Manis; together with many small specimens preserved in bottles. The side opposite to the window presents to view, among other animal specimens, skeletons of the head of the hippopotamus, the wild ox of Canara, the wild buffalo, and the wild hog; and the skin of a boa-constrictor, thirteen feet in length. A few crystals, minerals, and pigments prepared in India, are also here deposited; and among a few remaining articles illustrative of Eastern manufactures, are a curious pair of forge bellows used by Burmese smiths, and a Ceylonese parasol, about three feet in diameter, made from plaited or interwoven strips of the leaf of the Talpat palm; of which material also are made large folding fans, used by the native Ceylonese ladies. A glass case in the middle of the room contains minerals and fossils; as well as a few other objects, among which is a bottle filled with the poison of the Upas tree.

We now pass on to the fourth and last room of the Museum, situated on the same floor as the one which we have just left. The contents of this room consist

principally of objects brought from or relating to China. A series of shelves on the west and north sides are occupied by a valuable collection of Chinese books in various departments of literature: they are in general rather thin, and are deposited, six or eight together, in pasteboard cases.

On the left of the window in this room is a glass case containing many specimens of charms, talismans, and felicitous appendages worn about the person or hung up in the houses of the Chinese. In order to explain the nature and assigned qualities of these relics, Mr. Morrison, who presented them to the Museum, wrote a description of them in the 'Transactions' of the Society, from which we may borrow a few explanatory remarks. "*Money-swords*" consist of a number of old copper coins, strung together in the form of a sword, and kept straight by a piece of iron running up the middle. They are hung at the heads of beds, that the supposed presence of the monarchs under whose reigns the coins were struck, may have the effect of keeping away ghosts and evil spirits: they are used chiefly in houses or rooms where persons have committed suicide, or have suffered a violent death; and sick persons use them to hasten their recovery. The "*hundred family-lock*" is a charm constructed thus:—A man goes round among his friends, and having obtained from one hundred different persons three or four copper coins each, he expends them in the making of a lock, which he hangs on his child's neck, for the purpose of locking him, as it were, to life, and making the one hundred persons sureties for his attaining old age. The "*old brass mirror*" is a charm which is supposed to possess the virtue of immediately healing any one who has become mad by the sight of a spirit or demon, by merely taking a glance at himself in it; it is kept in the chief apartments of the rich, for the purpose of scaring away spirits. The "*peach charm*" consists of a sprig of peach-blossoms, which, on the first day of the first moon, is placed in some districts at the head of the door of every house, to drive away demons and malignant spirits. The "*Yuh seal*" is a stone worn by children on their foreheads or wrists, on which are engraved short sentences, and which is supposed to suppress fright, and to show whether a child is well or ill, by a clear appearance in the one case and a dark appearance in the other. The *gourd:* gourd-bottles being formerly carried by old men on their backs, figures of them, made either of copper or of the wood of old men's coffins, are worn as charms for longevity; the former round the neck, the latter round the wrist. Besides many other charms of these kinds, which may be deemed talismans, there are little sacred books, which are suspended from the girdle in small silk bags, and hence called *girdle scriptures*. People of property buy them for their children, and pay priests to repeat the prayers, &c. contained in them, in order to preserve their children from premature death. Lastly, there are certain spells, consisting of words written on scraps of paper. These spells are sometimes kept about the person, and sometimes pasted on walls and over doors; some also are used as cures for sick persons, by being either written on leaves and then transferred into some liquid, or by being written on paper, burnt, and then thrown into the liquid, after which the patient has to drink off the liquid and the spell together. A further description of these spells is not here necessary, as their general character may be easily imagined: there are spells for almost every one of the Chinese deities. The names given above are translations, by Mr. Morrison, of the Chinese names applied to the respective articles.

In the same range of glass cases which contain these charms and spells, is a miscellaneous assemblage of objects, brought principally from China and other countries in the eastern parts of Asia. Among these are two Chinese 'chop-sticks,' made of ivory, about ten or twelve inches long; a very neatly and delicately made Chinese steelyard; a complete apparatus for the opium-smokers, consisting of a pipe, a lamp, an ash-pan, &c.; a mariner's compass, in use among the Chinese navigators; Chinese metallic mirrors, substitutes for looking-glass; a flute, and other musical instruments; a Chinese bird-cage in form of a junk; fans and fly-flappers; Chinese and Burmese dresses, robes, hats, shoes, &c.; a fragment of a Chinese tombstone, found in a tea-chest brought to England. There are also counting-machines, under the name of *Schwan-pan*, somewhat similar to the *Abacus* of the ancients, in which little beads strung upon wires, and ranged in a certain order, enable the people for whom they are intended to perform simple arithmetical computation, such as addition and subtraction. An interesting series of articles here is a complete Chinese writing apparatus, comprising the paper, pens, ink, &c. used by that singular people.

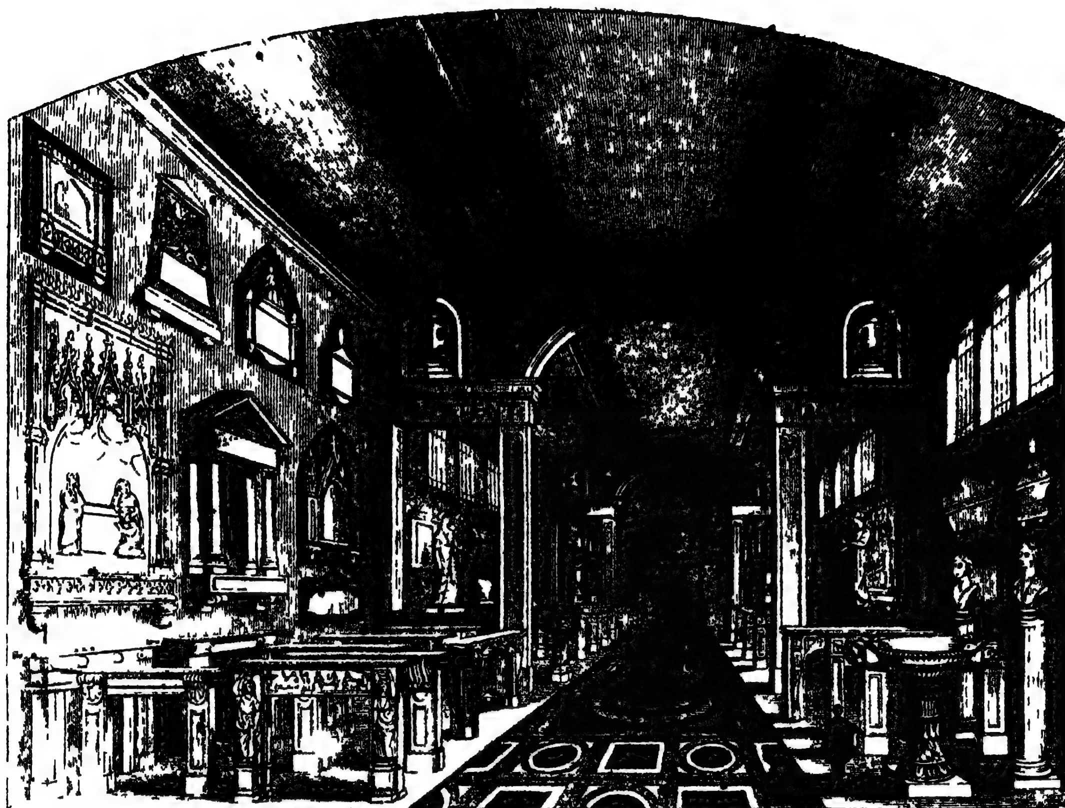
Between the windows of this room are a case of Oriental books, a carved chair brought from Malacca, and a sheet of paper which would set even the "double Times" in the shade; it measures sixty feet by twenty-five, and was made in Kumaoon, a district of Northern India, from the inner fibres of the bark of the *set-burooah*, or *Daphne Cannabina*. The adjoining side of the room is occupied partly by the Chinese books lately alluded to, and partly by miscellaneous curiosities, such as a *vina*, or Indian guitar; a South-Indian horn, shaped something like the English serpent; two or three Burmese stringed instruments resembling harps; a *Satola*, or Burmese guitar, having nearly the form of an alligator; a model of a Parsee cemetery erected at Bombay; a model of a pagoda at Tinnevelly; another of a Buddhist preaching-house; and others of Burmese war-boats, &c.

The reader has probably encountered in the public journals during the late transactions between the English and the Chinese, some mention of the *chops*, or official documents of the Chinese empire, and might like to know what is the appearance presented by such documents. On the north side of this room is a 'chop,' the translation of which would probably not be a little curious. It is a kind of permit or licence granted to the captain of the ship Sarah, for him to depart from Canton with his cargo for England. This was the first ship which left Canton for England after the throwing open of the China trade in 1834; having on board a cargo of silk valued at four hundred thousand pounds. The 'chop' is written on a sheet of paper measuring about three feet by two, and the writing with which the sheet is covered, in the Chinese character, consists of an enumeration of the qualities, importance, and virtues of the official personage who grants it; a statement of the reasons why the stranger-person is desirous of going to his own country; an acknowledgement that all the proper dues had been paid, and observances fulfilled by the captain, and a permission to him to set sail.

Some portions of this room are occupied by glass cases containing stuffed birds, insects, and other objects belonging to the department of natural history, in most instances belonging to species now found in Asiatic countries. In the middle of the room is a model of a *Vihari*, or Ceylonese Buddhist temple; and on the landing leading thereto are a set of Persian portraits of ladies, a Hindoo painting on copper, and a curious Hindoo map of India painted on cloth.

In conclusion we may remark that this Museum, like that collected by the United Service Association, is well calculated to illustrate the subjects, the study and elucidation of which form the objects for which the Society was established.

A DAY AT THE LONDON MARBLE-WORKS.



[Show Room of the London Marble Working Company, Esher Street, Millbank, Westminster.]

The cutting of a piece of stone, and bringing it to a form and appearance adapted to the purposes of the builder, are operations which, until the last few years, have undergone but a very slight amount of change. The pickaxe at the quarry, and the saw and chisel at the mason's yard, have probably for ages been the instruments by which these operations have been conducted: and, indeed, so far as regards the common building-stones, the same remark may be made in our own day. The more costly kind of stone, to which we give the name of *marble*, and which, from its nature, is susceptible of a high and durable polish, requires for its due preparation an amount of labour far exceeding that which is customarily bestowed upon the commoner kinds of stone; and this circumstance has led, within a period comparatively recent, to the construction of machines which enable the processes of sawing, grinding, polishing, &c. to be performed with more expedition and less expenditure of manual labour than characterized the same operations formerly. Were it not for this circumstance, we should not probably have called the reader's attention to this department of mechanical art; but there are many points connected with the subject at the present day which deserve a little notice.

So far as stone is employed in large blocks for the construction of buildings, strength and durability are the chief qualities for which the material is valued; but when we have a substance such as marble, in which delicacy and purity of colour are combined with a susceptibility of receiving a high polish, and of being cut into elegant forms, a new measure of value is obtained. our notions of *taste* and *beauty* are at once appealed to and the refining influence which objects of taste exert on mankind is shared by this substance in common with some others. That this is felt to be the case, is shown by the evidence given before the parliamentary committee on the Arts and Principles of Design, in 1836. It appeared to be an opinion on the part of many members of the Committee, that if so beautiful a substance as marble could be brought more plentifully and economically within the reach of the inhabitants of this country, it would tend to advance the arts of design, and to diffuse a taste for the elegancies which are so well appreciated in Italy. On this subject, Mr. Cowper gave the following evidence:—

"613. Would you not conceive, if the arts were generally diffused among the people, the black marble of Derbyshire and different marbles would be converted to purposes at present almost unknown?—Certainly.

"614. Is there not some tendency now existing towards the conversion of that and various marbles to purposes of art?—There is, both as to the various marbles and various other materials. At the marble-works, Esher Street, Horseferry Road, there is a beautiful system of machinery for working ornamental marble; mouldings, slabs, and pilasters of beautiful workmanship, are executed in British and foreign marble at a low price. The whole is the contrivance of Mr. Tulloch, an independent gentleman of great taste, as his large collection of paintings by the old masters testifies He, from observing the great use of marble in Italy,

and in other countries, contrived this machinery for the express purpose of introducing marble into more general use in this country."

After a few questions relating to a patent mode of carving busts in ivory, Mr. Cowper was asked—

"632. If applied to oak, or hard wood, the expense would be considerably lessened?—Yes; and I have seen the most elegant parquetry floor made by it, which would be too expensive to be attempted by hand. Much, if not all, of the Gothic oak carving for the new houses of parliament might be done by it; and with Mr. Tulloch's machinery in Esher Street, almost all the Gothic stone mouldings might be executed; so that by this application of art to manufacture, the splendid palace of the legislature might itself be increased in splendour.

"633. Could it be used for working in wood and wainscoting, and for ornaments?—Yes; and there would be no difficulty in doing so."

As it may not be uninteresting to the reader to know the means by which marble may be thus brought into a useful and ornamental form by machinery, we shall in the present paper detail the results of a visit recently made to the establishment referred to in the above evidence, illustrating our remarks by a few wood-cuts, and by such descriptions as will explain in a familiar way the action of the patent machinery, without attempting minute detail.

It is necessary to state the distinction between marble and other kinds of stone. This term is applied to those finer varieties of granular and compact limestone, which, being of a closer grain, are susceptible of a superior polish, and are remarkable either for their whiteness, their blackness, or the beauty and variety of their colours. In former times the appellation of marble (derived from the Greek verb, to *shine* or *glitter*) was indiscriminately given to many stony masses that admit of being polished; and accordingly we find alabaster, serpentine, basalt, porphyry, &c. occasionally included under that term. At present, however, it is customary to confine the term 'marble' to the kinds of limestone above alluded to, whether in a pure state, or varied with foreign substances mixed with or imbedded in the mass, such as serpentine, hornblende, quartz, &c. Where a piece of marble is not purely white (and white specimens are very rare), it has received its tints generally from the oxides of iron, the solution of which has, wholly or partially, penetrated the mass previous to its complete induration. Blue and green marbles frequently owe their tints to minute particles of hornblende. The black varieties, such as those of Ireland and of Derbyshire, are coloured by carbon, and sometimes by a kind of bitumen.

The ancient statues, of which so many beautiful specimens are still remaining, were formed of marble obtained from quarries which are met with even in the present day; and the general character of all such quarries may be judged from a notice of those at Carrara. Several ridges of low hills near the town of Carrara have been known for the marble-quarries worked there ever since the time of the Romans. The quarries are more than a hundred in number, some furnishing the purest white marble which the sculptor can obtain, and others marble variously tinted and adapted for ornamental purposes. The quarries were worked throughout the flourishing period of the Roman empire; after which they fell into disuse, and did not resume their importance till the Pisans took possession of them in the twelfth century.

Of this assemblage of quarries Mr. Simonds observes:—"Formerly on the sea-side, it now forms a deep nook in the mountain behind: but all Italy, all Europe, and all the world, might be covered with temples and peopled with statues of Carrara marble, yet the main stock would sustain scarcely a visible diminution by the loss of such fragments of its vastness. The rock is strewed over with these fragments detached from the heights by pygmies whom you scarcely see above, working with their puny tools, and blasting with gunpowder. The face of the noble rock, exposed for ages to the weather, is black; while the new fractures are dazzling white, and their crystal grain, dimly transparent, looks as if a single stroke of the chisel—a skilful one indeed—might make it breathe at once."* Twelve hundred workmen are constantly employed at the quarries; and the annual revenue is calculated at seven or eight hundred thousand francs. The blocks are carried down from the quarry in carts, drawn by oxen, to the Spiaggia, or beach of Avenza, where the storehouses are, and whence the marble is shipped on board the vessels that anchor in the roads. As the freight of the blocks would be uselessly increased if they were exported in misshapen masses, they are frequently sawn into squares by saw-mills, turned by some small streams which flow down the side of the hills in which the quarries are situated

The marble, thus brought to London in the rough state, whether from Italy, from France, from Ireland, or from the northern parts of England, we will suppose to be consigned to the marble-working establishment before spoken of; and we will proceed to describe the general arrangement of the buildings, and the action of the different machines employed for working it.

Most Londoners, and perhaps most visitors to London, are aware that the Milbank Penitentiary is situated at a little distance north-west of Vauxhall Bridge. Immediately to the north of this building is Holywell Street, out of which branches a smaller street called Esher Street; and in this last-mentioned street is situated the London marble-works; or, to give the full name, the "London Marble and Stone Works;" for other kinds of stone are worked besides marble The buildings comprise a long front range; three or four ranges of workshops and sheds; and open yards connecting these ranges one with another.

An arched entrance leads through the front range of buildings into an open court behind. On either side of this entrance are doors, the one on the left hand leading to offices and counting-houses, to which we shall not further allude. The entrance on the right is to a room occupied by monumental tablets and other articles in marble, in a state nearly approaching to completion; as well as plaster casts or models of which marble copies have been made.

From this lower room a staircase leads up to the show-room, which presents a very beautiful appearance. It is a kind of gallery, well adapted for the reception and exhibition of finished works in marble. The room is of great length, and is lighted by ranges of windows situated near the ceiling on both sides of the room, leaving ample space for monumental tablets, &c. beneath them. A clear passage is left through the middle of the room from end to end; on either side of which are ranged very numerous specimens of finished works in marble, such as chimney-pieces, pillars, pilasters, vases, urns, tables and table-tops, statues, busts, monumental tablets, mouldings, &c., and at one end of which are plates of looking glass. Some of these are very elaborately worked; and from the diversified colours of the specimens of marble employed, and the taste with which they are arranged, the whole presents a very elegant appearance. Others are nearly plain, and exhibit the accuracy with which the machinery employed can produce flat surfaces of marble, for such purposes

* 'Tour in Italy and Sicily,' p. 576.

as paving for halls, conservatories, dairies, shop-fronts, &c. Most of these objects being temporarily placed in this room, the collection varies from time to time. A short time ago, among the more elaborate works finished at the establishment, were a large Gothic monument, a marble fountain for Sutherland House, and a marble copy of the large vase presented to the British Museum by Lord Western in 1839. At a more recent visit we observed several balustrades and other articles of polished black Irish marble for Hamilton Palace in Scotland.

Descending from the show-room, we pass out into the court or yard behind the front range of buildings. This yard is occupied by large blocks of marble; some in the rough state in which they were brought to London, either merely trimmed with the chisel or rudely sawn into thick slabs; others in a more or less prepared state. Among these we noticed blocks of black marble from Ireland, of the unusually large dimensions of thirteen feet by ten or eleven; and other blocks of white marble from Italy, much smaller in size, and exhibiting examples of the rude manner in which the hand-sawing of the Italians is effected.

To the left of this yard, and extending behind the southern end of the front range of buildings, is another yard, almost entirely filled with marble which has been already cut up into slabs of an inch or so in thickness, and which are deposited here till wanted for the subsequent processes. A few slabs of the finer kinds of stone are among them; but marbles of various colours and qualities constitute the chief materials operated on.

Crossing to the right of the central court or yard, we come to the buildings in which the working processes are carried on. The main building is of two stories, each measuring probably eighty feet by fifty. The lower story or room has doors on the north, south, and west sides, each leading to an open court or yard; while on the east side is a door opening into an engine-room, where a steam-engine, supplied with the necessary appendages of furnace, boiler, fly-wheel, &c., produces the moving-power by which all the machinery is impelled. This large room is so filled with machines in active operation, and the unceasing noise of the sawing and grinding processes is so bewildering, that a stranger requires some little time to analyze the complicated arrangements of the room. By beginning at the source of power, however, viz., the steam-engine, and tracing the communication from one point to another, the skilful arrangement of the whole gradually becomes manifest, and exhibits the ingenuity of the inventor, Mr. Tulloch. The fly-wheel of the steam-engine moves a shaft to which, by an ingenious adaptation of cranks, four rods are made to move horizontally. Each of these rods, by a reciprocating longitudinal movement, moves a set of saws inserted in frames; and the arrangement of each frame, as we shall presently explain, is such as to admit of a block of marble being cut by these saws. There are thus four sawing-frames or machines, ranged in a rectangular form, two to the north and two to the south of the rotating shaft; and the whole occupying the greater part of the eastern half of the room.

On the western side of the room, next to the door by which we enter, is a 'ripping-bed,' a machine for cutting slabs of marble into narrow strips or into small pieces. Next to this is a 'grinding-bed,' on which the slabs are ground after sawing, and previous to the process of polishing. Beyond, and towards the northern end of the room, is a 'moulding-bed,' a machine by which pieces of marble are worked into the architectural form of mouldings, such as squares, fillets, beadings, hollows, and ovalos. All these machines consist of various parts to which motion of some kind or other is given, in one of the many ways which are familiar to those accustomed to machinery, but which can scarcely be made intelligible to general readers by written description. Shafts, drums, bands, cog-wheels, racks and pinions, bevel-wheels—all are brought into requisition, according to the kind of motion and the circumstances under which it is to be produced. At the eastern side of the room, in addition to the sawing-machines, is a lathe of large dimensions, turned by a shaft connected with the other machinery. At this lathe circular pieces of stone are moulded, or provided with the architectural mouldings just alluded to; and by it also circular columns are turned.

We will now pass to the upper story of the building, corresponding in size with the lower. This room is lighted on all four sides by windows, and contains a great number of workmen employed principally in the finishing processes of marble-working. There are several openings in the floor, to make room for the upper parts of the large sawing-machines below, and for some of the motive apparatus by which the machines are worked. Between and around these openings work-benches are erected, at which the men are employed. The operations are mostly effected by hand; but there are two machines on the western side, called 'polishing-beds,' at which the finishing operation is given to slabs and other flat pieces of marble. A door from the southern end of this room leads to the show-room.

We now leave the large building, and pass through an open shed or shop attached to its western wall. This shed exhibits an instance of the ubiquity (if we may be allowed the term) of steam-power; for by carrying a shaft through the wall which separates the shed from the sawing-room, three or four machines in the former are set in motion as effectually as if they were in the large building. The first of these, connected immediately with the shaft, is a grinding-machine, for grinding smaller pieces of marble than those operated on by the machine in the large building. Next to this, and connected with it by a revolving drum and band, is a machine for cutting circular slabs of marble of any dimensions up to six or eight feet in diameter. Adjacent to this is a third machine, by which small circles, a few inches in diameter, are cut out of slabs of marble, and by which, with a little modification of arrangement, cylinders, tubes, and columns might be cut. The remaining part of this shed is occupied by workbenches at which men are engaged in sawing, grinding, and polishing small pieces of marble, the working of which scarcely requires the aid of the machines.

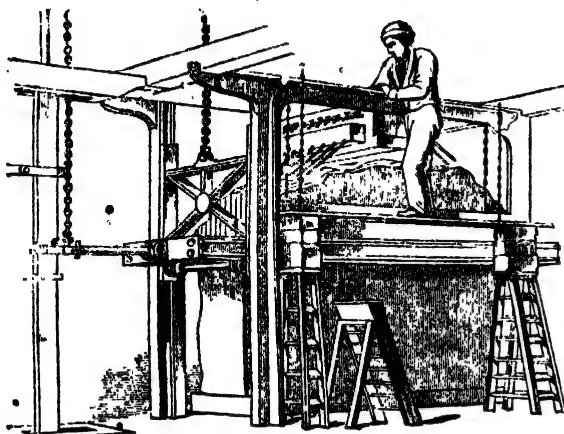
A narrow avenue separates the shed just alluded to from a long range of shops, in which those departments of marble-working are carried on in which the mallet and chisel are the principal instruments employed. Small benches, ranged laterally across the shop throughout its whole length, are occupied by men engaged principally in sculpturing or carving the ornamental parts of marble-work.

Beyond this range of carving shops is a millwright's-shop, in which the numerous saws, chisels, and other instruments of iron and steel employed in the processes of the manufacture are repaired and sharpened; and in which repairs and adjustments of the machinery are made. At the left of this is a large open yard entirely filled with slabs of statuary marble, which have been cut by the machines, and are deposited here till wanted. To the right or eastward of the millwright's-shop is another open yard, occupied partly by stores of stone and marble not yet brought under the action of the saw, and partly by the sand and the apparatus for cleansing and preparing it, required in the process of sawing.

We have now taken a glance at the general arrangement of the establishment, to show the mutual depen-

dence of its several parts. Our next object is, to trace the progress of a block of marble through the several processes which it, or the pieces into which it is cut, undergo, till its final conversion into slabs, pillars, mouldings, plinths, vases, or other specimens of marble-work. We shall thus have an opportunity of describing the particular action of all the machines separately, as they are brought into requisition.

The first machine employed on a block of marble after it is deposited in the manufactory, is the large sawing-machine, one of which is represented in the



annexed cut. There are five or six of these in operation, but the action of any one will illustrate that of all the rest. The process of sawing must of course be regulated according to the purpose for which the marble is employed. In a monumental tablet, the pieces of marble employed are generally broad, flat, and thin, whether or not they be highly decorated. In a chimney-piece, the several parts are likewise made from rather thin slabs and strips; in marble steps, table-tops, pavements, &c., the same remark applies; and indeed in the larger proportion of articles made of marble, the pieces from which they are formed are flat slabs or sheets, rather than massive pieces. In many of the ornamental purposes to which marble is applied, a foundation of commoner stone, of brick, of wood, or of cement, is first formed, and then the marble is superposed merely as a sort of casing. It results from this mode of using it, that a block of marble is in most cases converted into slabs of an inch or so in thickness before being applied to its ulterior purpose.

This first process of sawing is that in which the application of machinery is perhaps of the greatest importance, not only as regards the expenditure of manual labour, but also in reference to the accuracy with which the cutting is effected. With regard to the first point, many persons must have observed the singularly inefficient way in which the muscular power of a man is exerted in the common mode of sawing a stone. He sits at one end of the stone, grasping with his hands one end of a frame which contains an iron saw or cutter, and this saw he pushes to and fro as a means of dividing the block of stone or marble into slabs. Now it is manifest on a very little consideration, that his muscular strength is not equally effective as a working-power during these reciprocal movements; to push and to pull, to draw upwards and to draw downwards, to extend the hands from the body and to draw them to it, are respectively efforts which produce very unequal effects. If we watch the proceedings of a stone-sawyer, we shall also see that the saw frequently 'jars,' or has a tremulous motion consequent on the unequable manner in which it is moved; the result of which is, that the cut is not equally effective throughout the whole length of the block. All these circumstances combine to render the cutting by hand a very slow one.

With respect to the accuracy of the cutting, it may well be supposed that this is with difficulty attained by hand. The blade of the saw or cutting instrument is not above three or four inches wide, and is extremely apt to twist a little out of the vertical plane. If we were to attempt to cut through a large cheese with a common knife, the cut would be more and more irregular in proportion as the blade of the knife was narrower. So in the case of the stone; the narrowness of the blade—necessary to ensure its easy passage through the stone—renders it so liable to deviate from the vertical plane, that a perfectly level cut is almost unattainable by hand. This irregularity produces two ill consequences: it renders a laborious process of grinding necessary, in order to produce a level surface; and it occasions a waste of material, which is of serious importance if the quality of the marble be valuable. Of this latter fact we saw a striking instance. In the central yard of the marble-works were the two halves of a large and very fine block of statuary marble, which had been cut into two in Italy before exportation. The cutting had been effected by hand; and on glancing the eye along the surface of one of the pieces thus cut, it was obvious that the surface was about nine inches out of a true plane, the saw having twisted in various directions during the process of cutting. The distortion thus occasioned affected both halves equally, for a convex protuberance in one half had a corresponding depression on the other; and to bring both these to a true surface, the middle portion of the one and the edges of the other had to be sawn or ground away to the depth of nine inches. It happened that this block was one of the finest specimens of purely white marble, a fact which could not be fully ascertained until the cut was made; the quality was so valuable, that the portion wasted by the irregular sawing would, if cut into slabs, have been worth a sum estimated by the proprietors at nearly a hundred and fifty pounds.

These are some of the circumstances which render the employment of machinery very important; and Sir George Wright and Sir James Jelf some years ago devised machines for these purposes. Their attempts, from various causes, were not permanently successful; but the mechanism of Mr. Tulloch has now been in operation several years. The sawing-frames each consist of a cast-iron framework, to hold the working machinery together, about twelve feet long. A horizontal rectangular frame, longer than the block to be cut, and wider than the block is thick, has mechanism at each end by which a number of saws may be fixed parallel to the length of the frame, and with the blade of each saw in a vertical plane. By means of pins and wedges, the saws can be fixed at any required distance apart; suppose, for instance, that a block is to be cut into a number of slabs each one inch thick; an equal number of saws would be fixed in the frame strictly parallel one to another, and exactly an inch apart: so that the saws themselves would ensure the accurate regulation of the thickness of the slabs. The saw-frame is capable of sliding in vertical grooves in the cast-iron supporters, and is balanced by weights connected with it by a chain passing over a pulley above; the saws are thus kept at a height from the ground corresponding to the part of the block which is being cut; and as they are a little heavier than the balance-weight, they gradually descend by their own pressure as the cutting proceeds.

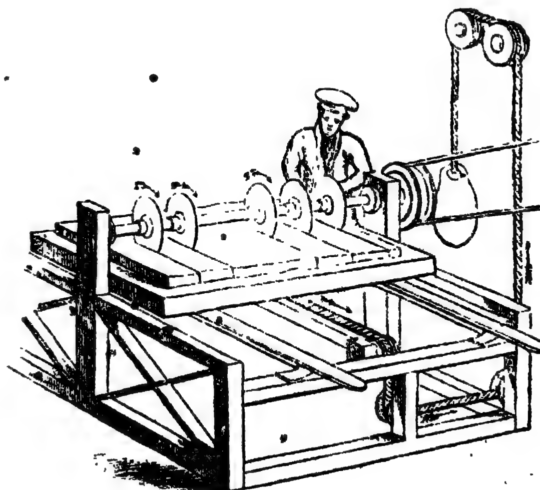
The saws here spoken of are rather unfortunately named. A stone-saw is not a saw at all. It is merely a piece of soft sheet-iron, with a blunt, smooth, straight edge, unprovided with teeth. Its action is not, properly speaking, to *cut* the stone, but to separate the particles of the material by friction. The effect is much increased by the addition of sand and water, the latter of which in some degree softens the stone, while the sharp particles of the former aid the frictive action of the saw; the small hard particles which constitute sand may indeed be deemed substitutes for the teeth of a saw. The quality of the sand is varied according to the nature and hardness of the stone to be cut; coarse sharp sand being used for soft kinds of stone, while very fine sand is better fitted for the harder stones. At the marble-works the sand employed is obtained from the neighbourhood of Croydon. It is well washed in large vessels, in order to free it as much as possible from extraneous substances; after which it is placed in a large brick receptacle covered with a roof, but open to the air, where it is kept till wanted. The cleanness of the sand employed is a matter of considerable importance; for if a small fragment of wood, or a grain so large that it will not penetrate (but rolls over) the stone, gets among the sand, the action of the saw is much impeded, and the removal of the obstacle is very difficult.

We will suppose that a block of Italian marble, eight or ten feet long, five or six wide, and one and a half thick, is to be cut into as many inch slabs as it will make, say sixteen. Sixteen saws are fitted into the frame parallel and equidistant, and the whole are lifted up by means of a windlass acting on the balance-weight above, to a height sufficient to allow the block of marble to be placed edge uppermost beneath them. The block is placed as nearly vertical as practicable, and is wedged and supported so as to remain firm. A very ingenious little machine, in which Mr. Tulloch has shown much inventive contrivance, is then suspended over the block, for supplying the saws with the requisite amount of sand and water. In the ordinary method of sawing by hand, a board is placed so as to slope towards the fissure made by the saw; and at the upper part of this board is placed a vessel of water, from which a small but constant stream is running down the board into the opening. A quantity of sand previously washed is also placed on the board at a little distance from the point where the water is running; and a portion of this sand is drawn forward by the workman into the running water by means of a stick with a hook at the end, and carried down gradually into the fissure made by the saw. But by Mr. Tulloch's contrivance several saw-fissures are supplied with sand and water at once. An iron cistern, about two feet long, one high, and one wide, is filled with water; and in each side are fixed about twenty cocks. The water, slowly flowing from these cocks, falls into an equal number of little grooves formed in the bottom of a box filled with sand; and these grooves are so constructed that the sand and water flow out together at a number of little openings on one side of the box. These streams of sand and water are then so directed as to flow each into one of the saw-fissures. As there are two grooved boxes, one on each side of the cistern, there are two streams of sand and water flowing into each fissure. This is one of those small pieces of mechanism frequently met with in our manufactures, in which more inventive ingenuity is often called for than in machines apparently much more important.

The saws being made to rest on the block, and the sand and water being arranged to flow into the fissures as soon as they are made, the saw-frame is set into reciprocating horizontal motion by a connection being formed between it and the working shaft of the steam-engine. By a particular application of a parallel motion somewhat similar to that of Watt, the saws are moved in a strictly horizontal manner, the length of the stroke of each saw being about eighteen inches. When the saw comes to the end of its stroke, it is lifted up a little by means of an inclined plane, so as to allow the sand and water to flow down beneath it in the crevice. As the cutting proceeds, the assemblage of saws descend by their own weight being a little greater than that of the balance; and the reciprocating motion continues till the block has been entirely divided into slabs.

There are four machines of the kind just described, all connected by rods with the working-shaft of the steam-engine, and all capable of receiving and working an equal number of saws. But within the last few years blocks of black marble from Galway have been procured of such large dimensions that the sawing-machines are not able to receive them. For working on such blocks another sawing-frame has been erected out in the open yard, but still in connection with the working power of the steam-engine. We saw a block of Galway marble, thirteen feet long by ten feet wide, under process of sawing in this frame; it was being cut into slabs for forming the landings of a grand staircase in Hamilton Palace.

After a block of marble has been cut into slabs, it is for many purposes required to be reduced to the form of narrow strips, such the several parts of a chimney-piece, or of a monumental tablet; or else into small pieces of various shapes. The large sawing-frames are not adapted for this smaller kind of workmanship, which is therefore effected in a machine called a 'ripping-bed,' represented in the annexed

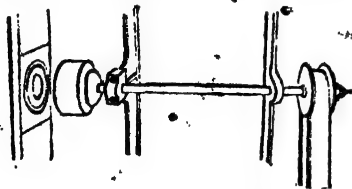


cut. This is a kind of table, twelve or fourteen feet long, six or seven wide, and three high; the flat of which is made of cast-iron. On this iron bed is placed one of plank, forming the top of the table; and on this the slabs which are to be cut into strips are temporarily fixed with plaster of Paris. A horizontal axle revolves a few inches above the table, and on this axle are fixed vertical cutters, consisting of circular pieces of soft iron about eight inches in diameter, the lower edge of which, while revolving, nearly touches the table. The iron bed on which the planking and the slab rest is connected, by means of pulleys, with a heavy weight, by which it is drawn slowly forward; the edge of the marble, thus forcibly drawn in contact with the edge of the cutter, is subjected to its cutting action, and is

pulled forward by the weight as fast as the cutting is effected. The axle, being several feet long, is adapted for the reception of several cutters at once, which may be so adjusted as to produce strips of any required width. Suppose, for example, it were required to cut a slab, three feet wide, into one dozen strips, all of different width: a series of cutters, all of equal diameter, would be fixed upon the axle at such relative distances apart as would correspond with the width of the strips to be produced, and all the cuttings would be made at one time. One man attends to the machine, adjusting the cutters to the axle, arranging the marble on the bed, adjusting the balance-weight to the work required to be effected, and keeping up a constant supply of sand and water at the fissures which the cutters make in the marble.

The form of this machine adapting it only to make rectilinear cuts, the production of a curve requires other arrangements. We have before stated that there are two machines for cutting circular pieces of marble from flat slabs. One of these, for circles of large dimensions, consists of a flat bed capable of receiving a slab six or eight feet in diameter, in a horizontal position. Above this is a vertical pillar, to the lower end of which are attached four arms at right angles with one another, and all exactly equal in length. To the bottom of each arm is fixed a piece of iron, such as the saws are made of, bent into a curve corresponding with the curvature of the circle to be produced. These pieces of iron are capable of being fixed at any distance from the centre, and the distance chosen in any particular instance depends on the diameter of the circle to be cut. When the arms revolve, the pieces of iron attached to their lower surfaces become cutters: each is capable of making a circular cut in the surface of the marble during one rotation, and all acting in conjunction to produce a more speedy effect. The slab is fastened down to the bed with plaster of Paris, to keep it from shifting during the process of sawing: and the fissure is kept constantly wetted with sand and water by a man or boy in attendance on the machine. The revolving arms are connected with a balance-weight in such a manner that the cutters sink in proportion as the fissure in the marble becomes deeper, until at length a circular piece is entirely cut out of the slab. We saw two beautiful variegated marble table-tops, about six feet in diameter, which had been cut to the circular form by this machine.

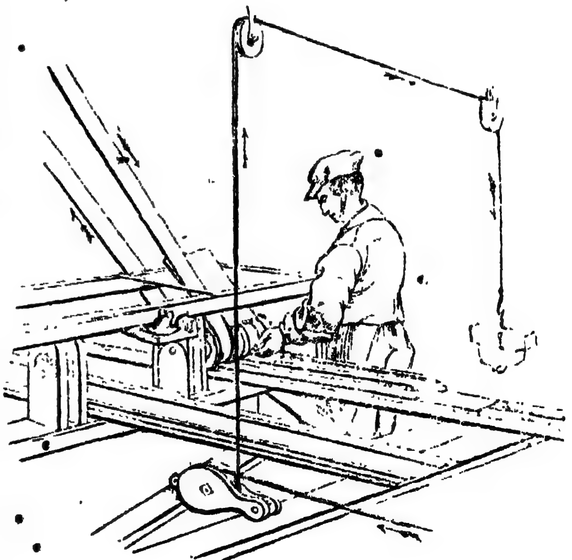
The smaller circular cutter acts on somewhat the



same principle as the larger. A vertical shaft is set in rotation, to the lower end of which is attached a hollow cylinder of sheet-iron. The lower edge of this cylinder acts as a cutter, the marble to be cut being placed in a stand or bench immediately beneath it. Cylinders of different sizes are kept for circles of varying diameters, and their depth is such that three or four pieces of marble might be laid one on another, and all cut at once. The same means of fixing the marble to the bench beneath, of supplying the fissure with sand and water, and of elevating and depressing the cutters, are adopted in this as in the other machines lately described. Some years ago a contrivance, bearing a certain degree of resemblance to this, was devised for forming round pillars and hollow cylinders and tubes of stone: the cutting instrument in both cases being a cylinder of metal. By a small circular cutter of this kind, pieces of marble may be cut in great number, and with great accuracy, for mosaic or tesselated pavements.

But a mere circle, with a plain edge, is only one of the forms in which a curved piece of marble is required for ornamental purposes. The edge itself, or portions of a pillar or pedestal, may be required to present some architectural form, such as squares, rounds, hollows, &c. To give this form to a piece of marble a lathe is employed, differing little from the common turning-lathe. A small block of marble in a rough state, or a small circular piece of slab, as the case may be, is attached to the lathe, and set into rapid rotation by a shaft connected with the steam-engine: and a workman proceeds to give it the required form. This he does not effect with an iron cutter used with sand and water, nor with a mallet and chisel, but with long sharp-pointed instruments of steel, the points of which he brings in contact with the stone in the same manner as the turner uses his chisel. The stone flies off in small fragments by the use of the sharp-pointed instrument; and when a rough approximation to the shape has been thus produced, other tools, such as gouges, &c., are employed to complete the form of the piece of marble. Pillars and other objects of a similar kind could be worked by these means.

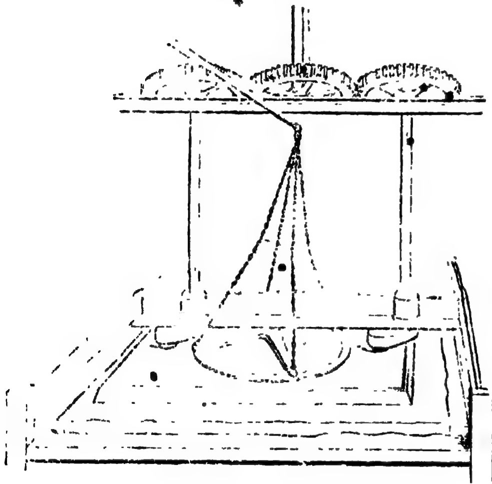
A few paragraphs back we described a machine called a 'ripping-bed,' by which a slab of marble could be cut up into strips. The strips thus produced are sometimes used in their plain form, after being polished; but they are more frequently diversified with mouldings, in a manner exemplified by the upright sides of a marble chimney-piece. These mouldings are worked by an ingenious machine called a 'mould-



ing-bed,' bearing a good deal of resemblance to the 'ripping-bed,' so far as regards the flat table on which the marble is laid, and the position of a revolving axle a little above the table. But the cutters by which the mouldings are wrought are altogether different: they consist not of circular pieces of sheet-iron, but of masses of iron whose circular surfaces have been wrought into various forms, the counterparts of the different mouldings to be produced. We saw several hundreds of these cutters, adapted for all the various patterns likely to be demanded. When a strip of

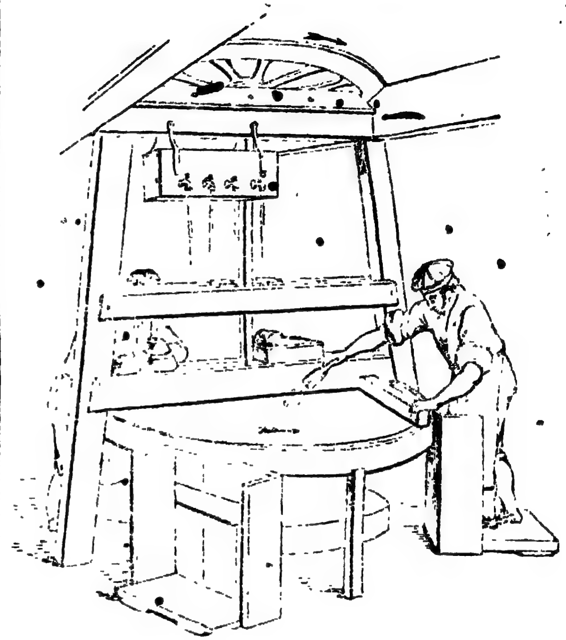
marble is to be moulded to any particular form, an iron cutter corresponding with that form, or rather, the counterpart to it, is placed on an axle just above the bed of the machine, and firmly fixed in its place. The strip of marble is then fixed down with plaster of Paris to a board which is capable of being moved slowly forward by a rope and pulley, as in the other machines, at such a height as shall just allow the iron cutter to make the required depth of cutting. The cutter being set into rapid rotation, the marble is brought up to it, and is cut away by the action of the revolving iron. The marble advances onwards as fast as it is cut, and then presents a series of parallel mouldings on its surface, the counterpart of those in the cutter.

We have now, we believe, described all the machines whose action is to cut the blocks of marble into smaller pieces of various forms, and have next to speak of those whose office is to give a smooth and polished surface to the pieces so cut. The action of the cutters, whatever be their form, necessarily leaves a certain degree of roughness of surface; and if the cutting be made irregularly, the surface is not only rough, but uneven. Under all circumstances, therefore, a slab or piece of marble requires to be ground after it is cut. The means of effecting this at the marble-works are various, according to the size of the slab to be operated on. If the slab be large, a 'grinding-bed,' situated



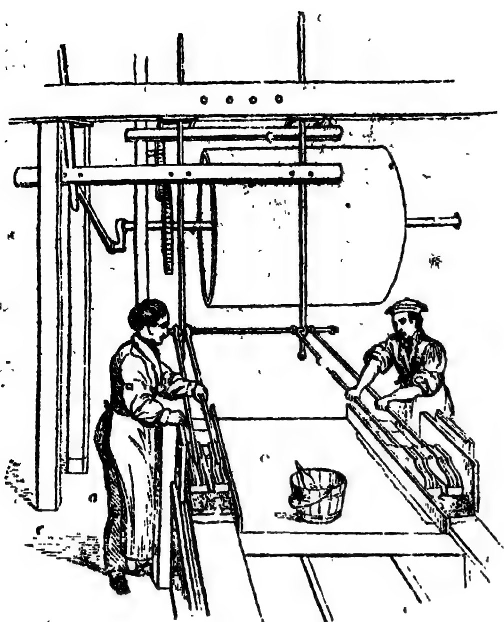
near the large sawing-frames, is employed. This consists mainly of a very strong wooden bed or table on which the slab is laid, and of a large cast-iron plate whose lower surface performs the grinding process. The bed is subject to a very slow reciprocating or backward and forward motion, by means of rack and pinion work beneath: while the iron plate, which is suspended from above, has a very singular motion given to it, not exactly either circular or rectilinear, but a compound of both. The combination of these movements in the bed to which the marble is attached, and in the iron plate which is superposed on it, is such that the motion of any one point may be compared to the curves on an engine-turned watch. The object of this very ingenious contrivance is, that every part of the slab may be ground in the same degree and in the same manner, and that the movement of the iron over any particular part of the surface of the marble may be as varied in direction as possible. This process, like that of sawing, requires a supply of sand and water to aid the action of the iron. The supply is effected in a curious manner. The plate is surrounded by a raised ledge, and is pierced in various parts with round holes. It thus forms a kind of shallow box with a perforated bottom; and being filled or partially filled with moistened sand, the latter finds its way down through the holes, and moistens the whole surface of the marble beneath the iron. The plate is capable of being elevated and depressed to different heights, to accommodate the thickness of the marble which may be placed beneath it.

The machine just described is particularly calculated for grinding large flat surfaces of marble, which it reduces to a plane almost mathematically correct. But for smaller pieces of marble, or the edges of slabs, another machine is employed, in which the grinding



instrument, although arranged in a totally different manner, is still made of iron. A circular plate of iron, about five feet in diameter, and two inches in thickness is placed in a horizontal position, and connected with a vertical shaft or axle which passes through the centre. This axle, by the aid of intervening wheel-work, is set into rotation, and in its turn rotates the iron plate. The lower surface and the edge of the plate are hidden, but the upper surface is open; and being at a height of about three feet from the ground, it forms a convenient bed or bench at which the men may work; it is in fact an iron workbench revolving in a horizontal direction. This 'circular grinding-bed,' which the workmen—with the peculiar nomenclature of which most workmen are so fond—call a 'roundabout,' is moistened with sand and water; and any pieces of marble which are to be ground by its aid are pressed down firmly upon it. The iron surface has the same effect on the marble in this instance as in the former, the difference being in the kind of motion given to the iron, and in the iron being beneath the marble instead of above it.

The action of a surface of iron, used as in the two machines just described, is not to polish the piece of marble exposed to it, but merely to bring it to a perfect level, by removing all saw-marks and other irregularities of surface. But as one of the chief beauties for which marble is admired is the brillant gloss which its surface presents when highly worked, the slabs or strips, after being ground by one of the two machines described above, are carried to a polishing-machine, or 'polishing-bed,' situated in the upper floor of the



building. This machine is about twelve feet long, four or five wide, and three high. It consists of a flat bed on which the piece of marble is laid, and mechanism for working the polishing instruments. Each of these latter is about two feet long and four inches wide, formed of lead or some other heavy substance, and faced at the bottom with a layer of a peculiar kind of felt, adapted for the polishing of marble. Each polisher is connected by means of a long handle with the working machinery of the steam-engine, by which it acquires a backward and forward motion over the surface of the marble; and the arrangement is such that several polishers may be wrought at one time. All flat surfaces of marble, whether large slabs or narrow strips, may be polished in this way.

There are, in most worked specimens of marble, whether articles of furniture or of decoration, numerous small pieces which cannot be conveniently or profitably prepared by the machines which have lately engaged our attention. This is especially the case where any elaborate carved-work forms part of the design. It thence results that there are a large number of men employed at the marble-works, besides those who are in attendance on the machinery. A brief notice of the modes in which the manual labour of these workmen is applied, will be a necessary sequel to our preceding details.

If a small piece of marble is to be cut in a manner which does not require the aid of the machines, a man uses a kind of small hand-saw, formed, like the larger saws, of a piece of soft iron without teeth. This piece of iron is fixed into a handle, and it is used nearly in the same manner as a common saw; the workmen keeping the fissure in the marble constantly supplied with sand and water. The process of grinding small pieces of marble by hand is in like manner a miniature representation of the analogous process as effected by machinery. Small pieces of iron, attached to wooden handles of a convenient shape, constitute the grinding tools, which are used with sand and water.

The chisel and mallet are tools of which we have not had much occasion to speak; but they are much used in the finer and ornamental parts of the work. This is often very slow and tedious work. The piece of marble to be carved is placed upon a bench; and the workman, provided with chisels, gouges, and pointed instruments of various shapes, chips away the marble until he has formed the required device or pattern. Foliage, groups of figures, and indeed all patterns in which varying undulations of surface occur, are produced by these means. We saw, under process of carving, several elaborate balusters of black marble for a staircase at Hamilton Palace. Each baluster was about a yard in length, and five or six inches in thickness, and profusely decorated in every part. One piece of marble, without joint or division, formed each baluster; so that the carver had to chisel away just enough, and no more, to produce the required pattern. The beautiful substance of which these balusters were formed suggests a remark on the store of material which we have in our own country and in the sister island. This black marble, brought from a quarry near Galway, is perfectly spotless, as black as jet, and susceptible of a very high polish; and as the blocks procurable from thence are among the largest which have ever been brought to England, the marble is capable of being applied to a great variety of purposes. A visit to the British Museum will show that our quarries are capable of supplying black and coloured marbles of great beauty. In the New Mineralogical Gallery are two tables, one presented to the Museum by Mr. Martin, and the other, in 1838, by the Duke of Rutland. The former consists of a richly variegated green and white serpentine marble, brought from the quarry of Ballinabinch, near Galway. The latter consists of two kinds of marble; the frame-work, legs, and bottom plinth of the table being of black marble, brought from Bakewell in Derbyshire; and the top being composed of a very curious sponge-coloured slab of stalagmitic marble, from Hartle in the same county. If the means were attained for working up these fine marbles in an expeditious and economical manner (and the patent machinery seems calculated to aid in producing this result), the more extensive use of our home quarries would in all probability follow.

All the pieces of marble which have passed through the hands of the carver require to be ground and polished before the beauty of surface can be developed. This is effected by using small pieces of different substances, such as cast-iron, gritstone, smooth stone, and slate, shaped so as to suit the diversities of ornament, and rubbed over the marble until the latter is brought to a fine surface. These are processes which it is not probable machinery will ever be made to perform. Instead of expressing any surprise at this circumstance, we cannot but admire the ingenuity which could effect so many different processes by machinery: the cutting of slabs from the block; the cutting of strips from a slab; the cutting of various-sized circles; the cutting of architectural mouldings in a slip of marble; the grinding of a large slab by one machine, and of small pieces by another; the polishing of the pieces thus ground; and the adjustment of machinery by which all these processes are performed through the agency of one working shaft of the steam-engine; required no small share of inventive talent.

In conclusion we may say, that if a visitor is resolute enough to bear the "setting his teeth on edge" by the noise of the sawing, there is much to interest him at this establishment, which we have been obligingly permitted to describe.



[Sumpnour and Pardoner.]

CHAUCER'S PORTRAIT GALLERY.

THE SUMPNOUR.

The Sumpnour and the Pardoner,—two important personages in the management of ecclesiastical affairs during the middle ages, but now so completely fallen into oblivion that their very names will doubtless appear strange to many of our readers,—show very strongly the bent of Chaucer's mind during that eventful period of church history. The bold exactions of which the first was the instrument, and the impudent cheats put upon the people by the other, had no doubt made them generally obnoxious; but still there was wanted a popular concentration of the popular idea to do them full justice: and this Chaucer furnished in the two masterly portraits now before us. The one that will at present engage our attention is the Sumpnour, or Summoner, an officer employed to summon delinquents to the ecclesiastical courts, now known as an apparitor. In the 'Frere's Tale' we have a complete view of the position and duties of this individual, from which it appears that it was his business to seek out cases for the archdeacons to punish; cases of witchcraft,

> "Of defamation, and avouterie,
> Of church reves, and of testaments,
> Of contracts, and lack of sacraments,
> Of usure, and of simony also,
> But certes lechers did he greatest woe."

Offenders of the latter description appear to have been his chief object of search, and he employed spies to inform him as to who were wealthy, and to draw those into temptation whom it "availed" to punish. This brief account will serve to make clearer one or two passages in the following description:—

> "A Sumpnour was there with us in that place,
> That had a fire-red cherubinnes face;
> For sausfleme* he was, with eyen narrow,
> * * * * * *
> With scalled† browes black and pilled‡ beard,
> Of his visage children were sore afeard.
> There n'as quicksilver, litarge, ne brimstone,
> Boras, ceruse, ne oil of tartar none,
> Ne ointément that woulde cleanse or bite,
> That him might helpen of his whelkes§ white,
> Ne of the knobbes sitting on his cheeks.
> Well loved he garlic, onions and leeks;
> And for to drink strong wine as red as blood;
> Then would he speak, and cry as he were wood||.
> And when that he well drunken had the wine,
> Then would he speaken no word but Latine.
> A fewe termes could he, two or three
> That he had learned out of some decree:

* In the 'Thousand Notable Things,' a prescription is given for "a sausfleame, or red pimpled face." Two of the ingredients are quicksilver and brimstone.

† Scurfy. ‡ Bald, or scanty.

§ In the work before mentioned we find it also stated that oil of tartar "will take away clean all spots, freckles, and filthy *wheales*." This last word means, we presume, the same as whelkes, a corrupt breaking out on the face.

|| Wild or mad.

No wonder is,—he heard it all the day.
And eke ye knowen well, how that a jay
Can clepen* 'Wat!' as well as can the pope.
But whoso would in other thing him grope,
Then had he spent all his philosophy:
Ay, *Questio quid juris*, would he cry.
* * * * * * *
Full privily a finch eke could he pull†.
And if he found owhere‡ a good felaw
He woulde teachen him to have none awe
In such a case of the archdeacon's curse;
But if § a manne's soul were in his purse,
For in his purse he should ypunished be:
Purse is the archdeacon's hell, said he.
But well I wot he lied right in deed
Of cursing ought each guilty man him dread.
For curse will slay right as assoiling saveth:
And also ware him of a *significavit*||.
In danger had he at his owen guise
The younge girles of the diocise,¶
And knew their counsel, and was of their rede**.
A garland had he set upon his head,
As great as it were for an alestake††:
A buckler had he made him of a cake."

We wonder whether Shakspere had Chaucer's Sumpnour in his eye, when he makes Fluellen thus describe to Henry V. "one Bardolph, if your majesty know the man: his face is all bubukles, and whelks, and knobs, and flames of fire." The description at all events reminds one instantly of that of the elder poet. The last "is humorously drawn," says Warton, "as counteracting his profession by his example: he is libidinous and voluptuous, and his rosy countenance belies his occupation." He then adds, "that it is an indirect satire on the ecclesiastical proceedings of those times." Even before the time of the author of the 'Canterbury Tales,' the Sumpnour appears to have distinguished himself by the contrast which Warton points out, and to have brought down upon him the indignation of equally zealous but less powerful satirists. We find, in 'Piers Plowman's Visions,' the "somoners and their lemmans" marked out for especial reprobation in his indignant censures of the conduct of those then connected with the church. And after the period of Chaucer, he enjoys no greater amount of favour from the poets; for Milton calls him, and the whole race of such persons, with that vehemence of phrase but too familiar with him in some of his prose writings, "a hell-pestering rabble."

His affectation of law terms, picked up from the decrees and pleadings which he had overheard during his attendance in court—his display of learning, when, having "well drunken" of the wine, he will speak nothing but the Latin, which the law-terms have taught him—above all, his flights for refuge to the one parrot cry, "Questio quid juris," are highly humorous and amusing. Mr. Tyrrwhitt's explanation of the origin of this phrase, which the Sumpnour finds so useful when he hath "spent all his philosophy," is "that this kind of question occurs frequently in Ralph de Hengham (a law writer and chief justice of the Court of King's Bench, in the time of Edward I.); after having stated a case, he adds 'Quid juris?' and then proceeds to give the answer to it."

Chaucer has not described the Sumpnour's dress. About the sixteenth century the colour of the garb of ecclesiastical attendants generally appears to have been tawny. In Shakspere's 'Henry VI.,' the Bishop of Winchester is said to be attended by men in tawny coats; but in other passages of dramatic authors we have the Sumpnour more particularly referred to by that mark. Mr. Steevens quotes the following passage:—"Though I was never a tawny coat, I have played the summoner's part." In the Sutherland manuscript we have an entirely different garb. There the Sumpnour wears a jacket or surcoat of blue, and pantaloons of scarlet. He has the garland on his head, worn, we may imagine, to set off the beauty of the face beneath, which is faithfully delineated from the poet's verses; the buckler, apparently made of a cake, by his side, and a sealed letter or summons in his hand.

We conclude with noticing that the Friars and Sumpnours of the fourteenth century do not appear to have looked on each other with very favourable feelings. During the pilgrimage, we learn that the

"Noble frere
He made alway a manner louring cheer
Upon the Sumpnour,"

and as soon as the opportunity offers, says,

"If it like unto this company,
I will you of a Sumpnour tell a game;
Parde, ye may well knowen, by the name,
That of a Sumpnour may no good be said."

He does accordingly tell a tale which affects the Sumpnour so strongly,

"That like an aspen leaf he quoke for ire."

He, however, takes his revenge in the story he tells in return, and a "very pretty quarrel" their fellow-travellers no doubt thought it.

* Call. † Or, as a modern gambler would say, pluck a pigeon. ‡ Anywhere. § *But if*,—except.

|| The writ *de excommunicato capiendo* was commonly called a *significavit*, from the commencing words.

¶ Girles may mean persons of both sexes. By having them in danger is meant that they were within the control of his office.

** *And was of their rede*, i.e. he advised with them.

†† A stake set up before an alehouse as a sign, and which, it appears, was sometimes decorated with a garland.

ENDEMIC AND EPIDEMIC DISEASES.

[Concluded from page 316.]

The middle ages were remarkable for the numerous epidemic visitations they sustained, induced in great part by the miserable condition in which the mass of the people lived. We have already alluded to the devastation committed by the Black Death. A disease known by the various names of *Mal des Ardens*, *St. Anthony's Fire*, *Feu Sacré*, &c., spread epidemically several times over various parts of Europe. It is first mentioned in the chronicles of Froissart for 945. The patient, seized with a burning fever, if he did not die, almost always lost one or more of his limbs by a mortification which destroyed them. Urban II. founded the order of St. Anthony in 1090, in order to succour those afflicted by it. Twenty-five years before this, the body of that saint had been transported from Constantinople to Vienne in Dauphiné; and it was generally believed that the sick arriving at the abbey where these were deposited, were relieved in seven or eight days. Immense crowds of sick arrived from all parts of Europe, many of whom left a limb behind them. Hugo, bishop of Lincoln, being in Normandy, says he saw crowds arrive of every age and sex, many of whom quite recovered, with the exception of the affected limbs, which were never preserved. As late as 1702 a vast number of these dried and blackened limbs were exhibited in the abbey. The disease has been observed on several occasions in much more recent times in France, Sweden, Germany, &c., and the name of *Ergotism* given to it, from the belief that it was produced by partaking of bread containing the spur or ergot of rye—a disease of that plant supposed to be produced by the instrumentality of insects. Dr. Bateman doubts the correctness of attributing this disease to spurred rye, and rather refers it to the existence of a state of famine, or at least defective nutrition. It has always been found to

occur in seasons of dearth, and to attack chiefly the poor peasantry and mendicants, while the miseries of war have never failed to increase its violence. "Is it probable," he asks, "that the rye through extensive provinces should thus become affected with ergot so as to produce a general epidemic? Is not the disappearance of the disease in our own day to be rather attributed to the improvements in agriculture, which have rendered dearths less frequent and extensive, and to the increase of commerce, which has facilitated the supply of nutritious food to make up for partial deficiencies, than to the disappearance of the disease in the corn?"

The curious epidemic disease called the Sweating Sickness has already been described in the pages of the 'Penny Magazine.'* One of the most universal diseases which reigned in Europe during the middle ages was the *Leprosy*. The precise nature of this disease is now involved in obscurity, but there is sufficient reason to believe that it differed materially from the leprosy of the Jews. By some it has been supposed to have been brought by the Crusaders from the East, but receptacles for lepers existed in France and England long prior to the epoch of these expeditions. Probably many diseases of the skin were confounded under this name; however this may be, the disease termed the leprosy spread over almost as great a portion of Europe during the middle ages as the plague itself. Persons so affected were crowded into hospitals (for the support of which large sums of money were devoted), in which they often remained for life, as the disease was usually deemed incurable. Not only did these various physical maladies prevail in Europe at the period in question, but various others sprang up which seemed to involve the intellectual and moral faculties in a participation of the diseased condition. Of this description are the Dancing Mania, and other convulsive diseases so ably described by Hecker.† So, too, the Lycantrophia, or Wolf Mania, mentioned by the Greek physicians, reappeared in these justly termed dark ages, in which numbers of persons, fancying themselves wolves, imitated the howling of these animals, prowled about the cemeteries by night, and abandoned themselves to the most revolting practices. "Ætius calls it," says Burton, in his 'Anatomy of Melancholy,' "a kind of melancholy, but I would rather refer it to madness, as most do." The various Crusades, and the insane fears of and cruel persecutions of witches and sorcerers, might easily be included in the same category.

In modern times two epidemics have especially attracted attention from the amazing rapidity and extent of their diffusion. A short notice of their progress will conclude the subject.

The *Influenza* was first described as raging epidemically by the historian De Thou in 1510. In 1557 the disease, commencing in Asia, spread all over Europe, and crossed the Atlantic. During the seventeenth and eighteenth centuries numerous epidemics prevailed, accounts of which having been handed down by competent observers, a general law of the progress of the disease has been pretty accurately deduced. "The disease, commencing sometimes as far east as Asia, but at all times proceeding from the north-east of Europe, has advanced westward until arriving at England; it has divided into two branches, one of which traversed the Atlantic to America, while the other has retrograded towards France, Spain, and Italy, to become lost in the Mediterranean. This course is the more remarkable as being that afterwards observed by the cholera." These different epidemics have received various names, as "La Grippe," "Epidemic Catarrh," &c., but it obtained its present name in Italy in 1775, from its *influence* being felt over nearly entire Europe. The last important invasion of this country by the disease took place in 1837. The state of the season prior to its appearance had been most inclement. A hurricane of almost unexampled violence in this country, on the 29th November, 1836, was followed on Christmas-day by a tremendous storm of snow and wind, which was simultaneous over great part of Europe, so that snow fell even in Lisbon and Palermo, while in England all intercommunication with the provinces was arrested. Snow, too, unknown to the oldest inhabitant, was also seen in Canton; and the French army at Constantine (in Algeria) was impeded for three days by its heavy fall. Including slight cases, Dr. Holland calculates that in the January following, at least half the population of London were suffering from Influenza. A month later it affected a like proportion at Paris, and then spread into Spain and Portugal. A similar epidemic prevailed in Australia at the end of 1836, simultaneously with the first appearance of the disease in the north of Europe. As to the cause of the disease, it is involved in obscurity. The influence of atmospheric changes and extraordinary seasons, and many other circumstances, have been adduced and examined, but have proved insufficient to account for the phenomena.

The mortality from Influenza is by no means so great as that resulting from most other epidemics, but it is really greater than apparent, by reason of its laying the foundation to several diseases which do not terminate fatally until it has disappeared. The aged are especially sufferers from it.

Both from its recent occurrence, and from its very extensive diffusion and great mortality, the epidemic of 1832, termed the *Cholera*, must be fresh in the recollection of most of our readers, and we will content ourselves with an abridgment of Dr. Wilson's historical account of its progress. Although the Brahmins maintain that this disease is described in the writings of Dhawantari, a mythological personage resembling the Esculapius of the Greeks, yet we have no reason to believe it ever raged to any considerable extent in India prior to 1817. During August of that year it broke out at Jessora, and in a few weeks ten thousand persons perished: conveyed thence to Calcutta, more than two hundred individuals became its victims every day. Spreading over the entire province of Bengal, the pestilence reached the grand army, then acting under the Marquis of Hastings on the banks of the Sinde, which consisted of ten thousand soldiers and eighty thousand camp-followers. His camp was soon converted into a vast hospital. In one week nearly a tenth part of the army was destroyed, but the disease was at that time arrested in the camp by a change of its locality. From the army and from Calcutta the cholera spread over all the provinces of India; and in 1818 and 1819 it reached the coasts of Coromandel, Ceylon, and the Indian Archipelago. In the Philippine Islands the natives accused the Europeans and the Chinese of magic, and fifteen thousand lives were lost in the struggle that thence resulted. It ravaged China in 1820, and passed the northern wall into Mongolia in 1821. In 1821 also it obtained admission into Arabia and Persia: at Muscat ten thousand persons perished, and in eleven days one-third of the whole of the inhabitants of Bussorah fell victims. In this year it reached Bagdad, then besieged by the Persians. In 1822 Aleppo became infected, and for three days three hundred persons daily perished. In 1823 it had arrived at the western shores of the Mediterranean, when its course became arrested for some years. In 1831 it appeared at Mecca, on the arrival of crowds of Moslem pilgrims from India, Persia, and other countries believed to be suffering from the disease. In

* Vol. ix., p. 271.

† 'Penny Magazine,' vol. viii., pp. 439, 454.

four days twenty thousand of their number are said to have perished. Egypt, which had hitherto escaped, by reason, as was supposed, of the rigid quarantine enforced by the pasha, now suffered in its various towns (to which the pilgrims retreating from Mecca resorted) all the most aggravated horrors of this disease.

Although as early as 1823 the cholera had been carried by the retreating Turks from the ports of the Persian Gulf to the borders of the Caspian Sea, and hence to the Russian port of Astrachan; yet, as it remained in an almost quiescent state, it exacted little attention until 1830, when it reappeared at Astrachan, reimported, as was supposed, from the south-western shores of the Caspian. In Astrachan four thousand perished, and twenty-one thousand in the surrounding provinces. In September, 1831, the disease had reached Moscow, and raged there, with the snow covering the ground, and the thermometer often 35° below zero. Notwithstanding every precaution derivable from military cordons and quarantine, it penetrated to St. Petersburg in the same year, and thence spread over Poland, Prussia, and Germany. It is supposed to have been imported into this country from Hamburg; however that may be, it is certain that it first manifested itself at Sunderland, to the vicinity of which town it was, at first confined. In February, 1832, however, it reached Edinburg and the shipping in the Thames, and in March Dublin was attacked. Although on its arrival in this country the cholera was the same virulent disease which it had manifested itself to be elsewhere, yet it did not spread to the same extent here as on the Continent; for upon the highest calculations not more than thirty thousand persons perished in the entire kingdom during the whole of its visitation. The epidemic, now having reached the extreme verge of Western Europe, divided into two branches: one of these pursued its course westward across the Atlantic, until it reached the American continent, whence it spread over the United States, Canada, and part of South America; the other branch turned towards the south-east, and invaded France, Italy, and the Peninsula. The proportionate mortality at Paris was much greater than that which had occurred in London. To the horrors of the pestilence were added those of a popular tumult, originating in the belief that the infliction arose from the wells and fountains of the city having been poisoned. In the city of Naples the most rigid quarantine regulations were in vain put into force in order to prevent the spread of the disease. All persons affected were crowded into hospitals, and all intercourse with them forbidden, while those who had attended upon them were sent to the lazarettos. The consequence of all this was the production of a terrible panic; thousands of the inhabitants left the city, and among those who remained violent tumultuary assemblages occurred; these could only be allayed by the king traversing the streets in person and partaking of the bread said to be poisoned, and the abandonment of the obnoxious quarantine regulations. The cholera has not always proceeded step by step in its progress, but has broken out in various and distant points, each forming new and separate centres of infection. Thus many places entirely escaped, as the kingdom of Hanover, and many districts in Germany and France; while in our own country, according to Sir James Clark, only two hundred and thirty-five towns and forty-one counties were infected. In all countries wherein it is not native, the disease has been found to subside in two or three years after its appearance; but it still continues to exist in India, and under a favourable combination of circumstances it may again become epidemic, and, passing its present limits, again devastate Europe and America.

As to the cause of this disease all at present is mere conjecture; and the various hypotheses attributing it to the influence of season, diet, &c. will not bear examination. It is certain that, like most other epidemics, it especially affects the poorer classes, and of these the aged are its especial victims. This is alike the case in India and in Europe. Excesses in diet also especially predispose to it.

Although the diseases which we have alluded to above are those which usually manifest themselves in an epidemic form, yet may a variety of others occasionally prevail in a similar manner: this is especially the case with cutaneous and febrile affections; thus, the scarlet fever, measles, and small-pox (an epidemic of small-pox has prevailed in England during the present year), frequently prevail epidemically; and one of the most destructive diseases met with in warm climates is the epidemic yellow fever.

Uses of Sickness.—Sickness is the mother of modesty, putteth us in mind of our mortality; and, when we are in the full career of our worldly pomp and jollity, she pulleth us by the ear, and maketh us know ourselves. Pliny calls it the sum of philosophy, if we could but perform that in our health which we promise in our sickness; for what sick man (as Secundus expostulates with Rufus) was ever lascivious, covetous, or ambitious? He envies no man, admires no man, flatters no man, despiseth no man, listens not after lies and tales, &c. And, were it not for such gentle remembrances, men would have no moderation of themselves; they would be worse than tigers, wolves, and lions: who should keep them in awe? Princes, masters, parents, magistrates, judges, friends, enemies, fair or foul means cannot contain us; but a little sickness (as Chrysostom observes) will correct and amend us. And, therefore, with good discretion, Jovianus Pontanus caused this short sentence to be engraven on his tomb in Naples:—"Labour, sorrow, grief, sickness, want, and woe, to serve proud masters, bear that superstitious yoke, and bury your dearest friends, &c., are the sauces of our life." If thy disease be continuate and painful to thee, it will not surely last; and a light affliction, which is but for a moment, causeth unto us a far more excellent and eternal weight of glory (2 Cor., iv. 17): be couragious; there is as much valour to be showed in thy bed, as in an army or at a sea-fight: thou shalt be rid at last. In the mean time, let it take its course; thy mind is not any way disabled. Bilibaldus Pirkimerus, senator to Charles V., ruled all Germany, lying most part of his days sick of the gout upon his bed. The more violent thy torture is, the less it will continue: and, though it be severe and hideous for the time, comfort thyself, as martyrs do, with honour and immortality. That famous philosopher Epicurus, being in as miserable pain of stone and colic as a man might endure, solaced himself with a conceit of immortality: the joy of his soul for his rare inventions repelled the pain of his bodily torments.—*Burton's Anat. of Melancholy.*

The two John Wicliffes—Remarkable Fact.—It is an extraordinary fact, but not the less true, that there were living at the same period two John Wicliffes, both born about the same time, both educated as ecclesiastics at Oxford, and becoming there the heads of houses, the one of Canterbury, the other of Chichester, and both dying within a year of each other. This is the more remarkable, as the name of Wicliffe is a local one; and the only locality in England bearing the name is the village about six miles from the town of Richmond in Yorkshire, where the Reformer is said to have been born, in or about the year 1324. This fact may not only clear him from several apparent inconsistencies of conduct, but from the graver charge preferred by Anthony Wood, Dr. Fell, bishop of Oxford, and other writers, that the zeal which he displayed in withstanding the errors of the Papacy was occasioned by nothing else than the loss of the wardenship of Canterbury Hall, Oxford, of which they say he was first deprived by Archbishop Langham, and finally by Pope Urban V.: and that "what he afterwards did was merely out of revenge, and not at all of conscience, and that, being a man of good parts, he exercised them to an evil end." Light is, however, thrown upon these matters by the discovery of the fact that the Warden of Canterbury Hall and the Reformer were two distinct individuals.—*Abridged from the Gentleman's Magazine.*



[Scene on the Danube.]

THE DANUBE.

A CHARACTERISTIC feature of the Danube, as well as of the Rhine, are the ruined castles, seen "frowning from every steep," and carrying back the thoughts of the spectator to the terrible period of their prosperity, the middle ages, when the bold barons, their owners, and the hordes of retainers they kept in pay, were chiefly supported on the spoil of the more industrious classes. Froissart and other writers give us a lamentable picture of the avarice, brutality, and reckless disregard of the commonest dictates of right and wrong exhibited by the nobility and clergy of Germany at the time to which we have referred. What an awful picture of society is opened to us in the witty remark of a German author quoted by Mr. Planché—"an archbishop thought he had a fair revenue before him when he built his fortress on the junction of four roads." The castle of the counts of Bogen was the home of a powerful family of this class of robber chieftains. It stands on the summit of the Bogenberg, right before us, and offers a striking example of the situations favoured by such residents. "Seated upon the apex of a pyramidal rock, inaccessible but by one narrow pass on its eastern side, which a handful of determined men might keep against a host, and commanding a view over nearly half the dukedom of Bavaria, its lawless lord watched from its battlements, like a vulture, the approach of his prey, and pouncing upon it, bore it up in triumph to his mountain eyrie." A curious story is told of Ludmilla, the brother of the last count of Bogen. On the death of her husband Albert, Louis, the second duke of Bavaria, hearing the reports of her beauty, offered her marriage, provided he should like her on personal acquaintance. Ludmilla consented: the Duke visited her, and, we presume, was not dissatisfied with her appearance and manners. The lady, however, doubtful of the sincerity of his protestations, playfully asked him one day to plight his troth to her in a tapestried chamber, and to let the figures of three knights, worked in the hangings, be witnesses. The Duke, smiling, held up his hand, and took the oath required, when three real living knights stepped from behind the tapestry, and compelled him formally to ratify the jesting contract he had made. We are now approaching a stream made sacred by the glorious poem of Hohenlinden,—the "Isar rolling rapidly" is not far distant, and the Danube, as it advances to the place where the waters mix together, becomes bolder and more interesting. Opposite the Kloster-Metten—a convent erected, according to the veracious authority of the legend, by Charlemagne, as a boon to a holy man whom he caught one day on the site playing various pranks, such as hanging his axe on a sunbeam, &c.—is the remarkable rock called the Natternberg, the only one to be found on the right bank for a space of eighty miles, and which has on the summit another of the ruined castles of the counts of Bogen. A rock thus isolated, and nearly three hundred feet high, has excited many geological speculations. The peasantry settle it, as usual, by a legend. The devil, hating the inhabitants of the neighbouring town of Deggendorf for their piety, brought an immense rock from Italy to crush them; when, fortunately, as he was passing near Kloster-Metten, with the rock under his arm, the bells of the convent rang for holy service, and "gnashing for anguish and despite and shame," he found himself compelled to let the

mountain fall on the spot where it now stands. There is here a bridge across the Danube (which is nearly twelve hundred feet wide), supported by twenty-six piers, but built very slightly, in order to its removal when the ice comes floating down the river. Deggendorf is famous for its annual festival of St. Michael's-eve, when pilgrims flock thither from all parts, to the number occasionally of fifty thousand persons. Absolution is granted to all comers, on account of the origin of the observance of the day. In 1337 the "Host" was, it is said, purloined by some Jews, and insults offered to it. The consequence was a frightful massacre of those unhappy persons. The whole story, with its marvellous incidents, and disgusting prejudice and cruelty, is pictured on the walls of the church of Deggendorf. As usual, the Jews were large *creditors* of their murderers. The waters of the Isar are seldom destitute of floating rafts of timber, which come down singly almost to the Danube: but before entering the great river which is to conduct them to Vienna, they are lashed together in pairs, and formed into fleets, consisting of three, four, or six pairs each. Huts are erected upon them to shelter the boatmen, and any passengers who may prefer making the voyage on these pleasant floating islands, where they have always at command an agreeable promenade, to the more restricted conveniences of the passage-boat. Many are the ruined castles, famous religious establishments, and picturesque villages and small towns, each of which has its own interesting legend or history, that we must pass by without notice or with but a very brief one. Among the latter we may enumerate the castle of Hoch-Winzer, Kinzing (the Castra Quintana of the Romans), Vilshofen, another Roman place, with its long light bridge and pretty gardens, the fine old ruin of Hildegartsberg, and the town of Windorf, well known for its extensive boat-building. "The Coblentz of the Danube," Passau, the capital of the Bavarian circle of the Lower Danube, is now before us, with the cathedral and the old fort of Oberhaus on the opposite height, standing out in bold relief against the sky. Passau is finely situated at the conflux of the Danube and the Inn, on a peninsula between the two rivers. A handsome bridge resting on seven piers of granite crosses the Danube, and a similar edifice of wood the Inn; each connecting the town with the suburbs in their respective directions. The fortress of Oberhaus is connected with the castle of Niederhaus, situated below it, and surrounded by no less than eight forts. Passau is the Castra Batava of the Romans. Perhaps the most interesting circumstance in the history of Passau is the preservation of the ancient and splendid Teutonic romance the 'Nibelungen Lied,' for which the world is indebted to Pelegrin, bishop of Passau, who in the tenth century collected the legends of which it is composed. The goître, that most disgusting of natural deformities to an "unaccustomed eye," is now frequently seen on the banks of the river; no pains are taken to conceal it, for here too, as in some parts of Switzerland, the goître is not unfrequently looked upon by the natives as a beauty. No one should leave Passau without turning "a long-lingering look behind" at the beauty of the scene. "Standing in the stern of the boat," writes Mr. Planché, "and looking back on the too rapidly disappearing scene, on our right arose the long walls and round towers of Oberhaus, upon a range of precipices richly hung with wood, and full four hundred fathoms high; on our left stood the Maria-Hilf-berg, crowned with its church, and the houses of the Inn-stadt picturesquely grouped at its foot; in the centre, the town of Passau, forming a salient angle upon a plane of water, nearly two thousand feet in width, and standing like an island between two of the noblest rivers in Germany. The time allowed us to contemplate this scene was as brief as the enjoyment was exquisite. The Danube, reinforced by the waves of the Inn and the Ilz, rushes with redoubled speed round a rocky cape, and *presto!* your boat is gliding between banks so savage and solitary, that you can scarcely believe some necromantic spell has not transported you, in the twinkling of an eye, thousands of miles from that 'peopled city,' the hum of which still lingers in your ear. In its eccentric course the river now forms itself, as it were, into a chain of beautiful lakes, each apparently shut in on all sides by precipitous hills, clothed with black firs that grow down to the very water's edge, while from amongst them peeps out, here and there, one of the little Swiss-looking cottages, with perhaps a rustic bridge thrown across a small cleft or chasm, through which a mountain rivulet falls, like a silver thread, into the flood below."

A little beyond the château of Fichtenstein, situated on the summit of a stupendous rock, is a small building in the centre of the river, generally considered as the boundary-mark between Bavaria and Austria. The custom-house of the latter country is at Engelhard's-zell, a little beyond. Passing the ancient château of Rana-riedl, on the ridge of a high mountain, with its white and peaked turrets beautifully backed by the deep blue sky, and a ravine at its side, through which comes a brawling stream, bringing down fire-wood from the forests of the interior, we approach one of the most interesting parts of the Danube. Nearly facing the crumbling ruins of the fortress of Waldkirche, "rises the ruin of Hagenbach, or Kirkbaum, upon the ridge of the long, lofty, and nearly perpendicular mountain, which terminates the chain on this side of the valley, and forms a promontory, round which the river, suddenly and rapidly wheeling, completely doubles itself, and enters a narrow defile, the romantic, and, I may say, awful beauty of which surpasses all description. . . . Enormous crags, piled one upon the other to the height of from three to four hundred fathoms, their weather-blanched pinnacles starting up among the black firs and tangled shrubs, that struggle to clothe each rugged pyramid from its base to its apex, form the entrance to this grand and gloomy gorge, through which the mighty stream now boils and hurries, winding and writhing, till at length you become so utterly bewildered, that nothing but a compass can give you the slightest idea of the direction of its course. . . . It is only on arriving at the very foot of the rocky wall (on the summit of which stands the château of Neuhaus), which forms an impenetrable barrier to the farther progress of the Danube northward, that you perceive the outlet from this valley of precipices. A beautiful lake opens to the right, near the point where the Grosse Michel disembogues itself from a woody ravine; and the mountain-chain gradually sinking on each side, the river widens and widens till the passenger would fancy it had completed its seaward course, and that he was entering upon the broad and fathomless ocean." From Aschach, a place of some importance in the time of Charlemagne, to Linz, the capital of Upper Austria, the banks of the Danube are made memorable by the wars which convulsed the provinces of Upper Austria during the seventeenth century, and which were rendered more terrible by the severities exercised by both sides during the struggle, and more particularly by Ferdinand II. on the unhappy Protestants, when the latter were defeated. The course of the Danube in this part is very intricate, and, without a pilot, dangerous, for the current is continually changing its course, and producing sand-banks to-day where none were visible perhaps a week ago. Linz has been frequently burnt: it was in one of the conflagrations that took place during the religious struggle we have re-

ferred to, that Kepler, who at that time resided in the suburbs of Linz, lost some valuable astronomical MSS. in the flames. The wooden bridge of Linz is upwards of one thousand feet long. Lofty and majestic eminences, green fertile valleys, and a long line of small pleasant-looking villages, characterise the progress of the river from Linz. Ebelsberg, lying a short distance from the Danube, was the scene of a desperate battle between the Austrians and French in 1807, when the latter crossed a wooden bridge, thirty fathoms long, in the face of a walled town, castle, and other fortifications, defended by eighty pieces of cannon and thirty thousand troops, and took the place, though with the most terrible slaughter. From twelve to sixteen thousand men fell in this conflict. Tilly's Berg is the name given to a large square building with four towers, given by the emperor Ferdinand to the famous and sanguinary Count de Tilly. The well-known town of Ens, said to have been first made a fortified place by Leopold, duke of Austria, who built the walls with Richard Cœur-de-Lion's ransom-money, is situated on a steep hill on the left bank of the river Ens, a short distance from its junction with the Danube. The next place to Ens of any interest is Ardagger, where the emperor Conrad III., when setting out on his unfortunate crusade, landed with an immense army in 1147, to prepare for passing the dangerous rocks towards which we are advancing, the Strudel and Wirbel. Under his banners seventy thousand knights completely armed, as many foot soldiers, a troop of females "in the armour and attitude of men," the chief of whom, from her gilt spurs and buskins, obtained the epithet of "the golden-footed dame," and an innumerable train of attendants, &c., passed down the Danube. "Two years afterwards a few boats, principally filled with priests who had followed the army, returned to these shores—all that treachery, battle, and disease had left of the mighty host that had so lately marched in full confidence to the conquest of Asia!"

After passing Grein, we approach "the most extraordinary scene on the long Danube, from its source in the Black Forest, to its mouth in the Black Sea. As soon as a bend of the river has shut out the view of Grein and its château, a mass of rock and castle, scarcely distinguishable from each other, appears to rise in the middle of the stream before you. The flood roars and rushes round each side of it; and ere you can perceive which way the boat will take, it dashes down a slight fall to the left, struggles awhile with the waves, and then sweeps round between two crags, on which are the fragments of old square towers, with crucifixes planted before them. It has scarcely righted itself from this first shock, when it is borne rapidly forward towards an immense block of stone, on which stands a third tower, till now hidden by the others, and having at its foot a dangerous eddy. The boat flashes like lightning through the tossing waves, within a few feet of the vortex, and comes immediately into still water, leaving the passenger who beholds this scene for the first time, mute with wonder and admiration. These are the Scylla and Charybdis of the Danube, the celebrated Strudel and Wirbel." From hence to Vienna, our space will only allow us to notice two of the numerous places of interest that give a still higher charm to the natural beauties and sublimities of the river. The first of these is the magnificent ruins of the castle of Durrenstein, which rise from a stupendous rock right before us as we emerge from a narrow and rocky gorge. Here, according to the balance of probabilities, was Richard confined. In the 'Chronicon Zwetlense,' it is stated that the English monarch was seized at Erpuch, now Erdberg, one of the suburbs of Vienna, and placed by Leopold in the custody of Hadmar, at Türnstein, which Mr. Planché says is Durrenstein.* These then are the walls which echoed with the clank of the chains which bound the noble limbs of the chivalrous crusader, king, and poet; and with the pleasanter sounds of the song and the lay, by means of which he repressed the gnawing indignation of his soul at the treatment he was compelled to endure, and beguiled many a weary hour; by means of which, above all, if we may credit a story which has entered too deeply into the national heart ever to be entirely disbelieved, except on stronger evidence than has yet been produced, the faithful Blondel discovered his captive sovereign, and by a continuation of the song Richard was singing announced his own presence to the agitated and delighted listener. The other spot to which we referred is the island of Lobau, to which the French army under Napoleon retreated after the defeat at Aspern, in which he lost thirty thousand men; and from which, after a delay of six weeks, he re-crossed the Danube, under circumstances in the highest degree calculated to add to the impressive character of the occasion:—

"The night was dark, and the thick mist allow'd
Nought to be seen save the artillery's flame,
Which arch'd the horizon like a fiery cloud,
And in the Danube's waters shone the same—
A mirror'd Hell! the volleying roar, and loud
Long boooming of each peal on peal, o'ercame
The ear far more than thunder, for Heaven's flashes
Spare or smite rarely,—Man's make millions ashes!"

The victory of Wagram followed, and laid Austria at Napoleon's feet.

* See 'Penny Magazine,' No. 99.

VIRGIN EARTH.

Virgin earth, correctly speaking, is that which has never been disturbed by the plough or any other implement of the cultivator. The husbandman, however, does not always so strictly confine the application of the term virgin soil: for we frequently find him applying it to soils that have been cultivated at some distant period, but which have been allowed to rest undisturbed so long, that it is presumed they possess the same properties.

Agriculture of late years has been endeavouring to raise itself to a higher position upon the scale of general intelligence than it formerly used to possess, and for this purpose the aid of several of the sciences—particularly chemistry and geology—have been invoked to render their assistance. Chemistry, no doubt, has already achieved much that was both necessary and desirable; but, notwithstanding this, a great deal remains to be achieved before agriculture can be reduced to anything approaching a regular system.

One thing, however, yet seems wanting, and that is, a careful and scientific examination into the nature and properties of virgin soil, in order that its peculiarly exciting and stimulating qualities upon vegetable productions generally should be accurately determined; for, were this the case, there would then be little art or mystery, where a soil had become impoverished by over-cropping or mismanagement, in applying the necessary remedy (in the form of a manure of some sort or other) for restoring it to its original state, or to a condition as nearly resembling virgin earth as possible. However exciting and invigorating the principle may be which this soil is found to possess, it is first necessary to expose it to the action of the atmosphere, in order that this principle be called into full and active operation; for while it continues shut out from the influence of the sun and the atmosphere, the power which it has upon vegetation appears to lie inert; but it ought to be borne in mind that nearly all sorts of plants derive a portion of their nourishment from water and the constituent parts of the atmosphere, and are not, consequently, wholly dependent upon the most

fertile soil for *all* that they require to bring them to a state of perfect maturity.

Farmers are commonly in the habit of thus designating all such soils as appear to them to have been deposited at a depth out of the reach of the ordinary mode of tillage; and hence it is that so many of them are now found introducing the practice of trench-ploughing, whereby a portion of this ***virgin earth*** is raised to the surface; and by its becoming mixed at once with the portion of the soil that has become weakened and impaired in its powers of productiveness, the whole mass is thereby greatly improved, and superior crops may be raised thereon for several succeeding years. Care, however, should be taken in trench-ploughing, not to throw upon the surface a subsoil of an inferior quality; for if there is a deficiency of soil of the primary order, trench-ploughing would only raise to the surface a substratum, or soil of a secondary order, and a great deal more of harm than of good would necessarily be the result. Hence it is, most probably, that among practical farmers so much diversity of opinion prevails regarding the utility of subsoil and trench-ploughing; for since there is so much diversity among soils, it would be an absurdity to suppose that the same treatment would everywhere succeed.

Nothing more clearly elucidates the fertility of virgin earth, as well as the necessity which exists for its being exposed to the action of the atmosphere, than the system of cultivation adopted in most *new* countries; and for example Upper Canada, as a corn-growing country, may be referred to. The primeval forests of that and countries similarly situated grow upon what may very properly be termed virgin soils. Now in these parts, even where there is but little underwood, and where the woods are termed open (in comparison with those where underwood abounds), they may be traversed for scores of miles without a single blade of grass being anywhere met with; but no sooner are the forests removed, either by fire or otherwise, and the influence of the sun and air brought into contact with the soil, or the surface of it at least, than vegetable productions, of one description or another, are found taking possession of the soil, and growing most luxuriantly. It is upon this surface soil that wheat and other corn-crops are grown in the new settlements; for the plough is not employed, for these two reasons, namely, the high rate of labourers' wages, and the difficulty attending the ploughing up of forest ground before the roots of the trees are sufficiently decayed to render them no longer any great impediment to the plough.

It is necessary, however, that the seed be covered with soil; for this means a small triangular harrow, possessing considerable strength, is employed, whereby the seed gets a slight covering. Sometimes one, sometimes two, or even a greater number of crops, are raised in this way. But as the amount of this soil which is then called into action is small, it ought not to surprise any one, if it should, after a year or two, appear to be exhausted, which is commonly the case; although it is a very common circumstance to find the settlers continuing to put in their seed, wheat or rye (upon the old stubbles and without ploughing) for several years, often indeed until the crops are scarcely worth the trouble of reaping, which, to say the least of it, is exceedingly bad management.

But those soils, if properly managed, will continue for many years, without the aid of any extraneous substance in the character of manure, to yield good crops; but then means must be taken to bring to the surface successive portions of the soil; first in the way already stated, then by shallow ploughing, and afterwards by deeper ploughing, by which means a new supply of the virgin earth will be brought into operation; and not only this, but the amount of loose soil will be greatly increased, and hence the roots of plants will have a large space to range in, and enlarged facilities for obtaining the food they may require.

Perfection of Glass-Manufacture among the Egyptians.—The fact proved by the illustrations of Rossellini, by extant relics of the glass-manufactory of Egypt in the British Museum, and by the extant confirmatory relics in various other museums, exposes the error of the ordinary and narrow ideas indulged in by historians on the subject. It is common to assert that, with the exception of some glass vessels at a great price, glass was little known and used till the time of Augustus, and never in windows till after the fall of the Roman empire. The fact of pieces of glass, of good manufacture, having been found at Pompeii, ought to have thrown doubt upon this allegation, derived from an ambiguous assertion of Pliny. The fact is, that glass and porcelain, of equally fine quality as the modern, were made 1800 years B.C., under the eighteenth dynasty. They were moreover made in perfection. This is another startling allegation supported by good proof, but a more startling one must still be added. *The glass-blowers of Thebes were greater proficients in the art than we are.* They possessed the art of staining glass, which, although not wholly lost, is comparatively but little known, and practised only by a few. Among the illustrations of Rossellini, there is a copy of a piece of stained glass of considerable taste of design and beauty of colour, in which the colour is struck through the whole vitrified structure; and there are instances of the design being equally struck through pieces of glass half an inch thick, perfectly incorporated with the structure, and appearing the same on the obverse as on the reverse side. In consequence of this fact it was that Winkleman truly asserted that the Egyptians of this time (the eighteenth dynasty) brought it to a much higher point of perfection than ourselves. In fact, after the decline of the art, Egypt became to Rome what Venice became afterwards to Europe. The great part of the supply of glass was considered by Pliny to derive its good quality from the ashes of a peculiar genus of kelp growing in abundance by the Lake Mareotis and the Red Sea. That kelp, reduced to a kind of green ash, is represented by Rossellini as brought in baskets to the glass-manufactories, and in his illustrations from the potteries, where a vitreous process was evidently employed for the purpose of glazing the earthen vessel. It is quite clear from contemporary records, and from proofs which remain, that Winkleman was right. They imitated amethysts and other precious stones with wonderful dexterity; and besides the art of staining glass, they must have been aware of the use of the diamond in cutting it and engraving it. In Mr. Salt's collection in the British Museum of the time of Thothmos III., 1500 years B.C., a piece is beautifully stained throughout, and skilfully engraved with his emblazonment. The profusion of glass in Egypt is easily proved. Fragments have been found of granite which are covered with a coating of stained glass, through which the hieroglyphics of the stone appear. The relation that the bodies of Alexander and Cyrus were deposited in glass coffins, which has been considered as a fable, is thus analogically proved. But the profusion of the dearest glass-manufactures may be equally proved. Vast numbers of imitative precious stones in glass, made by the Theban jewellers, are to be found in all the museums of Europe. Among them are the false emeralds, in which they seem to have succeeded best. There is little doubt that many of the large emerald basins used in the early Christian churches were of their manufacture. Diodorus Siculus says the coffins were commonly made of it in Ethiopia. The extensive character of the manufacture may be also inferred from a circumstance recorded by Pliny, that in the temple of Jupiter Ammon there was an obelisk of emerald, that is, of glass in imitation of emerald, sixty feet in height. The emerald hue which the glass-manufacturers of Europe gave to glass appears, from chemical analysis, to be imparted by oxide of copper; and the reds, used in imitation of the rubies, or in staining plate-glass, appear to have been derived from minium. All these facts prove the extensive knowledge of chemistry among the natives of Old Thebes. Glass bottles (*quart bottles?*), nearly similar to our wine bottles in colour and measure, though in shape resembling the wide-mouthed bottles used in preserving fruit, may be seen in the British Museum, and are found in abundance in other European cabinets.—*From a paper on the Ancient Egyptians, in the Westminster Review.*



Burns and his Localities. At top—Statue of Burns, by Flaxman, from the Monument at Edinburgh. On the left—1, Dumfries; 2, The Two Brigs of Ayr; 3, Burns' Mausoleum at Dumfries. On the right—1, Banks o' Doon; 2, Room in the Cottage at Maybole.

LOCAL MEMORIES OF GREAT MEN.

Burns.

In one of the letters of the great "national poet" of Scotland, as Henry Mackenzie, with a bold and far-sighted prescience, called Burns on the first publication of his poems, the latter writes,—"I am hurt to see the other towns, rivers, woods, haughs, &c. of Scotland immortalised in song, while my dear native country, the ancient bailieries of Carrick, Kyle, and Cunningham, famous, both in antient and modern times, for a gallant and warlike race of inhabitants—a country where civil and particularly religious liberty have ever found their first support and their last asylum—a country the birth-place of many famous philosophers, soldiers, and statesmen, and the scene of many important events recorded in history, particularly a great many of the actions of the glorious Wallace—yet we have never had one Scotch poet of any eminence to make the fertile banks of Irvine, the romantic woodlands and sequestered scenes on Ayr, and the heathy mountainous source and winding sweep of the Doon, emulate the Tay, Forth, Ettrick, and Tweed. This is a complaint I would gladly remedy; but, alas! I am far unequal to the task, both in genius and education." The date of this letter is 1785, the year preceding that in which the first edition of his poems was published, and when consequently he wanted that full confidence

in his own powers which the favourable opinion of the world only can give. Yet how short a time elapsed before he did remedy the neglect of which he complained!—before he invested the Irvine, the Ayr, and the Doon with charms more attractive than their own surpassing beauty, more permanent perhaps than even their own existence. Little could the poet think, even in his most dazzling visions, that the mere fact of his residence in that district, for whose scenery and recollections he was so solicitous, should give to it a new and more universally interesting character; that the memory of its "famous philosophers, soldiers, and statesmen" should all be absorbed in the memory of the ploughman-poet; that, in short, the peasants of his native land, with no unnatural exultation at the glory that had gone forth from among them, should cease to point out the scene of this great action, or of that illustrious man's home, but sum up all in the emphatic declaration, 'This is the Land of Burns.'"

In tracing the course of the poet's movements through the localities thus happily designated, we commence with the clay-built cottage on the banks of the Doon, built by his father's own hands. Here Robert Burns was born, on the 25th of January, 1759. The "clay bigging," as it was called by the country people, stood about two miles from Ayr, on the road to Maybole, and but a short distance from the "Auld Brig o' Doon," and from Alloway Kirk, the scene of the unearthly midnight revels in 'Tam o' Shanter.' Burns was accustomed, in his after-life, to allude to the circumstance attending his birth,—the season was rough; and within a few days a part of the cottage was blown down, and himself and mother removed for shelter to a neighbour's house—and ironically claim pity for the stormy passions of one thus tempestuously ushered into life. The cottage consisted of but two apartments, one used as a kitchen and sitting-room, the other as a kind of parlour called in Scotland a 'spence;' in a recess of the former stood the bed in which the poet was born. William Burness, the father, was, as is well known, subject to great pecuniary troubles, almost from the period of his marriage to that of his death. A circumstance of this nature caused him to sell the lease of the ground he cultivated, and of the clay bigging, to the corporation of shoemakers in Ayr. The latter is now occupied as an alehouse, which, as we may well suppose, is in no want of visitors. An album is kept by the host, in which strangers are desired to enter their names: these, in the month of December, 1838, amounted to three hundred and fifty! We must not omit to notice that opposite the alehouse is a thatched cottage scarcely less interesting, for in it lived Murdoch, Burns's kind and enthusiastic instructor.* Lochlea was the family's next residence, and for the first four years prospects looked brighter, but after that period there appears to have been almost a continual decline To make matters worse, disputes broke out between William Burness and his landlord, which still further enhanced the anxieties amid which the poet spent his earlier years. Of the character and attainments of the latter, at this time we have the best of evidence—his own. "At seven years of age," he says, "I was by no means a favourite with anybody. I was a good deal noted for retentive memory, a stubborn sturdy something in my disposition, and an enthusiastic idiot piety; I say idiot piety, because I was then but a child. Though it cost the schoolmaster some thrashings, I made an excellent English scholar; and by the time I was ten or eleven years of age I was a critic in substantives, verbs, and particles. The earliest composition that I recollect taking pleasure in was 'The Vision of Mirza,' and a hymn of Addison's beginning,

'[illegible] servants blest, O Lord!'

The "schoolmaster" was not the poet's only instructor; he learnt much from his own father, who, like the generality of Scottish peasants, possessed no inconsiderable amount of knowledge. In imparting this to his children the elder Burns spent his evenings. Books also lent their aid. The family library contained, among other works, some plays of Shakspere, the 'Heathen Pantheon,' Locke's 'Essay on the Human Understanding,' Allan Ramsay's and Young's poems, and 'Hervey's Meditations.' Yet to an humbler source than any of these must we look for the incidents which had the largest share in developing the poet's mind. "In my infant and boyish days," he writes to Dr. Moore, another of his early literary patrons, "I owed much to an old woman who resided in the family (Jenny Wilson by name), remarkable for her ignorance, credulity, and superstition; she had, I suppose, the largest collection in the country of tales and songs concerning devils, ghosts, fairies, brownies, witches, warlocks, spunkies, kelpies, elf-candles, dead-lights, wraiths, apparitions, cantraips, giants, enchanted towers, dragons, and other trumpery. This cultivated the latent seeds of poesie; but had so strong an effect on my imagination, that to this hour, in my nocturnal rambles, I sometimes keep a look-out in suspicious places." Besides the books we have mentioned, Burns possessed a collection of songs, which were to him the greatest of all his literary treasures. This, he says, "was my *vade-mecum*. I pored over them, driving my cart or walking to labour, song by song, verse by verse, carefully noting the true, tender, or sublime, from affectation and fustian." And under what circumstances were these studies pursued? "The cheerless gloom of a hermit," says the poet, "with the unceasing moil of a galley-slave, brought me to my sixteenth year!" His brother Gilbert, with a touching simplicity, enters more in detail into the history of the family distresses. "We lived very sparing. For several years butcher's-meat was a stranger in the house, while all the members of the family exerted themselves to the utmost of their strength, and rather beyond it, in the labours of the farm. My brother, at the age of thirteen, assisted in threshing the crop of corn, and at fifteen was the principal labourer on the farm; for we had no hired servant, male or female. The anguish of mind we felt at our tender years under these straits and difficulties was very great. To think of our father growing old—for he was now above fifty, broken down with the long-continued fatigues of his life, with a wife and five other children, and in a declining state of circumstances!—these reflections produced in my brother's mind and mine sensations of the deepest distress. .... I doubt not but the hard labour and sorrow of this period of his life was in a great measure the cause of that depression of spirits with which Robert was so often afflicted through his whole life afterwards." A new expedient was now tried on the farm of Lochlea; as corn was unprofitable, flax was cultivated, and the poet was sent to Irvine, in 1781, to learn the art of flax-dressing, in order that he should manufacture the home-produce for market. This was exchanging a toil which he liked (in moderation), for one which, by contrast, could not but disgust him. His spirits and his health alike gave way, and he expressed himself in his letters at the time as transported at the thought of soon bidding an adieu to all the pains and uneasinesses and disquietudes of this weary life. In 1784 his father died, just in time to be saved from the horrors of a gaol.

We now follow the bereaved family to the farm of Mossgiel, a place doubly dear to the lovers of poetry as that in which Burns wrote the best of his early pieces, and as having been described by Wordsworth in a very exquisite sonnet, which we transcribe:—

"'There,' said a stripling, pointing with much pride,
Towards a low roof, with green trees half-concealed,
'Is Mossgiel farm; and that's the very field
Where Burns plough'd up the daisy.' Far and wide
A plain below stretch'd seaward, while, descried
Above sea-clouds, the peaks of Arran rose;
And, by that simple notice, the repose
Of earth, sky, sea, and air was vivified.
Beneath the random bield of clod or stone,
Myriads of daisies have shone forth in flower
Near the lark's nest, and in their natural hour,
Have pass'd away; less happy than the one
That by the unwilling ploughshare died to prove
The tender charm of poetry and love."

Mossgiel was taken by the poet and his brother some months before their father's death, when his affairs appeared to be on the verge of bankruptcy; and it was stocked by the individual savings of the family. The farm, according to Gilbert Burns, "was a joint concern. Every member of the family was allowed ordinary wages for the labour he performed on the farm. My brother's allowance and mine was £7 per annum each. And during the whole time this family concern lasted, which was four years, as during the preceding period at Lochlea, his expenses never in any year exceeded his slender income." But the most pinching economy was once more found an insufficient remedy for a badly chosen soil and situation.

"Mossgiel," says Gilbert, "lies very high, and mostly in a cold wet bottom. The first four years that we were in the farm were very frosty, and the spring was very late. Our crops in consequence were very unprofitable; and notwithstanding our utmost diligence and economy, we found ourselves obliged to give up our bargain, with the loss of a considerable portion of our original stock." But during the period here referred to, matters of high moment had occurred, calculated to make even failures so distressing as this appear insignificant, from the brilliancy of the new prospects that opened to the gaze of one of the brothers. By the close of the year 1786, Robert Burns had added a new name to the illustrious roll of the great poets of Britain. Love, which throughout Burns's life continued an unfailing source of inspiration, also first impelled him to write. "You know," he observes in a communication to Dr. Moore, "our country custom of coupling a man and woman together as partners in the labours of harvest. In my fifteenth autumn, my partner was a bewitching creature, a year younger than myself. My scarcity of English denies me the power of doing her justice in that language; but you know the Scottish idiom, 'She was a bonnie sweet sonsie lass.'.... Among her other love-inspiring qualities, she sang sweetly; and it was her favourite reel to which I attempted giving an embodied vehicle in rhyme..... Thus with me began love and poetry." The verses written on this occasion, like those of Lord Byron, and perhaps of every other great poet's real first attempt, contained little or no indication of his genius. The difficulty of rhyme naturally first engages the attention of the poetical aspirant, and directs him to the works of the writers whom he most admires, for example and instruction; and it is only when this difficulty is mastered, that he begins to take practically to heart the conviction that the verse he has been studying is of little or no value except for the originality of the thoughts it may bear. With every fresh attempt, however, came increased power; and during the poet's residence at Mossgiel, 'My Nanny, O,' 'Green grow the Rashes,' 'Poor Mailie,' his satirical attacks on the 'New Light faction' of the Calvinists, the 'Holy Fair,' the 'Address to the De'il,' the wonderful dramatic extravaganza of the 'Jolly Beggars,' the 'Cotter's Saturday Night,' &c., in short, all the pieces that appeared in his first publication, were composed. For this, like most of the other principal epochs in Burns's career, we have his own history. "I weighed," he says in a letter to Dr. Moore, "my productions as impartially as was in my power. I thought they had merit; and it was a delicious idea that I should be called a clever fellow, even though it should never reach my ears—a poor negro-driver, or perhaps a victim to that inhospitable clime (Jamaica), and gone to the world of spirits. To know myself, had been all along my constant study. I weighed myself alone, I balanced myself with others, I watched every means of information, to see how much ground I occupied as a man and a poet: I studied assiduously Nature's design in my formation, where the lights and shades in character were intended. I was pretty confident my poems would meet with some applause; but, at the worst, the roar of the Atlantic would deafen the voice of censure, and the novelty of West Indian scenes make me forget neglect. I threw off six hundred copies, having got subscriptions for about three hundred and fifty." The foreign voyage, to which he refers so frequently in this letter, was projected in consequence of an event which at first caused Burns much misery, his connection with Jean Armour, afterwards Mrs. Burns. The promised birth of a child first revealed the matter to the maiden's father, who, instead of being pacified by the production of the "marriage lines," as a private acknowledgment of marriage is called in Scotland when the sanction of the Kirk has not been obtained, tore the paper from her hands, and throwing it into the fire, commanded her no longer to think of Burns as her husband. She trembled and obeyed, to the great anguish and not unnatural indignation of the poet. He determined, in consequence, to go out to the West Indies, and there push his fortune; and for the requisite means, he looked to the profits of his publication. And never was poet's first venture attended with more sudden or better deserved, and, therefore, more permanent success. "It is hardly possible," says Heron, one of his biographers, "to express with what eager admiration and delight the poems were everywhere received." The edition soon disappeared, and Burns proposed a second to his printer, "Wee Johnnie;" but the latter demurring, Burns was so incensed at his unreasonableness, that he even refused to allow some of his friends to secure the printer against the loss he so much dreaded. The profits of this publication were not very remarkable, twenty pounds being the sum total of the poet's receipts. In other matters also, he saw that as yet, at least, his reputation brought no tangible result with it. He might dine as often as he pleased with the rich and the powerful, but not the less did he find it necessary to return at midnight to his blanket and straw, which, says Allan Cunningham, "happened often to Burns." So he procured the situation of overseer on an estate in Jamaica, and prepared for his departure from Mossgiel and the loved country of his birth.

[To be continued.]

The Veronese Peasantry.—This is the richest part of Lombardy, covered with mulberries and vines, and thronging with, as it appears to us, a healthy population, full fed from the cradle to the grave. The children are stout and rosy, with masses of bright curling hair. The women are tall and well developed, and the old people so old that one would think they must themselves have forgotten they were ever young—the last thing they do forget. But they are never "rocked in the cradle of reposing age"—never cease from their labours. We see even the very old women, with their grey heads bare or covered with a fanciful straw hat, driving asses, and leading cows on the highway.—*Letters from Abroad, by Miss Sedgwick.*



Sir John Dinely.]

SIR JOHN DINELY.

It is some forty years ago since a remarkable personage, who is correctly enough represented in the above wood-cut, was to be daily gazed at amongst the sights of Windsor. One of the writer's earliest recollections is of this singular man. We see him now, as he appeared to our childish curiosity, mysteriously creeping by the first light of a winter's morning through the great gate of the lower ward of the Castle into the narrow back streets of the town. He then constantly wore a large cloak, called a roquelaure, beneath which appeared a pair of thin legs encased in dirty silk stockings. If the morning was wet, his cloak was not his only protection from the weather. He had a formidable umbrella; and, what was most wonderful, he stalked along upon pattens. Often have we watched him creeping out of his solitary house in the Castle, and most carefully locking doors behind him, as he went on his morning errands. There he lived in one of the houses of the Military Knights, then called Poor Knights, to which body he belonged: it was the house next to the governor's. No human being, it was imagined, had for some years entered that house except its eccentric possessor. The wise man, he held, was his own best assistant; and so he dispensed with all domestic service. In the morning, then, he duly went forth to make his frugal purchases for the day—a faggot, a candle, a small loaf, perhaps a herring. All luxuries, whether of meat, or tea, or sugar, or butter, were renounced. He had objects to be attained, and for whose attainment he laboured for years, which required money. His income in money, derived from his office, besides his house, was about sixty pounds. Regular attendance upon the service of Saint George's Chapel was his duty; and the long blue mantle which the Poor Knights wore covered the faded finery beneath, as well as the roquelaure hid the loaf and the farthing candle. But when the offices of the morning had been performed, and the sun, perchance, shone brightly, out came another creature. Wherever crowds were assembled,—wherever royalty was to be looked upon, and the sounds of military music summoned the fair ones of Windsor and Eton to the gay parade,—there was Sir John Dinely. The roquelaure was cast aside, and then were disclosed the treasures which it concealed—the embroidered coat, the silk-flowered waistcoat, the nether garments of faded velvet, carefully meeting the dirty silk stocking, which terminated in the half-polished shoe surmounted by the dingy silver buckle. The old wig, on great occasions, was newly powdered, and the best cocked-hat was brought forth, with a tarnished lace edging. There walked, then, on Windsor Terrace, at the beginning of the nineteenth century, one who might have sat for the costume of the days of George II. All other days were to him as nothing. He had dreams of ancient genealogies; and of alliances still subsisting between himself and the first families of the land; and of mansions described in Nash's 'History of Worcestershire,' with marble halls and "superb gates;" and of possessions that ought to be his own, which would place him upon an equality with the noblest and the wealthiest. A little money to be expended in law proceedings was to make these dreams realities. That money was to be obtained through a wife. To secure for himself a wife was the business of his existence; to display himself properly where women "most do congregate," was the object of his savings; to be constantly in the public eye was his glory and his hope. The man had not a particle of levity in these proceedings. His face had a grave and intellectual character; his deportment was staid and dignified. He had a wonderful discrimination in avoiding the tittering girls with whose faces he was familiar. But perchance some buxom matron or timid maiden who had seen him for the first time gazed upon the apparition with surprise and curiosity. He approached. With the air of one bred in courts, he made his most profound bow; and taking a printed paper from his pocket, reverently presented it and withdrew. We give an extract from one of these documents which is before us:—

"For a wife.

"As the prospect of my marriage has much increased lately, I am determined to take the best means to discover the lady most liberal in her esteem, by giving her fourteen days more to make her quickest steps towards matrimony, from the date of this paper

until eleven o'clock the next morning; and as the contest evidently will be superb, honourable, sacred, and lawfully affectionate, pray do not let false delicacy interrupt you. .... An eminent attorney here is lately returned from a view of my very superb gates before my capital house, built in the form of the queen's house. I have ordered him, or the next eminent attorney here, who can satisfy you of my possession in my estate, and every desirable particular concerning it, to make you the most liberal settlement you can desire, to the vast extent of three hundred thousand pounds." And then come some verses, concluding thus :—

> "A beautiful page shall carefully hold
> Your ladyship's train surrounded with gold."

Was this man mad? He had a monomania certainly; but in other matters he was the shrewdest man we ever knew. He was reserved and sarcastic to most persons; for too frequently was he insulted: but to those who were kind to him he displayed no common mind. Our childish curiosity about this singular person became, as we grew older, mixed with a respectful and higher interest. He was unfortunate. His misfortunes were inscribed in no less terrible a page than that book over which many a boy has wept and trembled—the 'Newgate Calendar.' In one of these volumes we had read that on the 17th of January, 1741, a dismal tragedy had occurred at Bristol. There were two brothers who had become enemies on account of the entail of property. The elder was Sir John Dinely Goodyere, Baronet; the younger, Samuel Dinely Goodyere, a captain in the navy, commanding the Ruby ship of war. The two brothers had long ceased to meet; but a common friend, at the request of the younger, brought them together. They dined at his house; they exchanged professions of brotherly love. When they separated, the baronet had to pass alone over College Green, at Bristol. He was encountered by six sailors, with the captain of the Ruby at their head. He was seized, gagged, carried to a boat, and thence to the ship—and he was strangled. The vengeance of the law was speedy. The vessel was detained upon suspicion; the crime was fully proved; and the inhuman brother and two of his confederates were hanged within two months. The Sir John Dinely of Windsor was the son of the murderer. That the poor man was perfectly familiar with all the circumstances of this tragedy there can be no doubt; and we have often thought that, shut up in his lonely house, with the horrible recollections of the past lingering about him, it was wonderful that he was not altogether mad. The family estates which might have come to Captain Goodyere were most probably forfeited to the crown. The poor advertiser for a wife alludes to this circumstance in another of his bills:—"Pray, my young charmers, give me a fair hearing; do not let your avaricious guardians unjustly fright you *with a false account of a forfeiture.*" But the estates were not to be recovered; and the penalty for the crime in the second generation was mitigated, we hope, by the innocent delusions by which the son of the guilty brother was buoyed up, even to his dying hour. Sir John Dinely was one morning missing from his due attendance upon the service of St. George's chapel. His door was broken open. His house was without furniture except a table and a chair or two. The passage by which it was entered was a receptacle for coals. The sitting-room was strewed with printing types—for he used to print his own bills after the rudest fashion;—in a small room beyond was stretched the poor man upon a pallet bed. He had studied physic; and he had prescribed for himself not injudiciously, having a few medicines always at hand. He lingered a few days, and then—*all* the dream was over.

FEATHERS—THEIR NATURE AND USES.

No part of the natural structure of a bird is appropriated to more opposite uses than the *feathers.* They are employed, after a certain preparatory process, as a decoration to the head-dresses of ladies and of military officers; as a material for filling beds, bolsters, and pillows; and as a material for the formation of writing-pens. It is evident that these several uses depend on different qualities in the feathers; beauty of appearance in the first case, softness of texture in the second, and the possession of a hollow quill or barrel in the third. We will offer a few explanatory remarks on these applications of feathers; but it may be desirable first to say a word or two on the nature of feathers generally.

Birds constitute the only class of animals in which feathers, properly so called, are found; for the slight indication of similar appendages in some varieties of insects are found to be different both in structure and mode of growth. No bird is entirely destitute of feathers; the turkey and the vulture are defective in some particular parts, the ostrich and the wading-birds in others, but all show indications of this kind of covering on some part or other of their bodies. The feathers differ greatly in character according to the part of the body where they are situated. The *down* is an extremely short layer situated beneath the common feathers: it gives an almost entire covering to some water-birds, such as the young goose at a very early age, and appears designed to defend the bird against cold and wet. The common *short feathers* grow pretty nearly all over the body, but more thickly upon the shoulders and loins, and along the under part of the neck and breast, than in most other parts. The *large feathers*, or *quills*, differ from the other feathers in being apparently rather instruments of motion than a covering for the bird; they are situated upon the wings and tail, and are found to be more strong and unyielding in birds of flight than in others. Besides the feathers here enumerated, there are others which can scarcely be classed in any of the divisions; such as those forming the crest of the peacock and some of the crane kind, the rump-feathers of the peacock, some of those in the bird of paradise, &c.; as far as our present knowledge extends, these appear to be more adapted for ornament than use.

The mode in which feathers grow on the bird is pretty much the same in most cases, and may be illustrated by the growth of the quills or large feathers. Before feathers appear on the newly-born bird, the skin is generally covered with little tufts of hair, ten or twelve hairs in each tuft; and Cuvier states that these tufts are implanted in a bulb which contains the sheath of the future feather. All feathers are originally contained in sheaths; these penetrate the skin, and become apparent, usually a few days after the bird leaves the shell; carrying out with it the tuft or fasciculus of hairs. The hair in most cases very soon falls off, and the feather gradually develops itself. The sheath here spoken of is tubular; the inner extremity, which is affixed to the skin, being blunt and perforated, in order to give passage to the bulb or vascular part of the feather, and the outer extremity being closed and pointed. The sheath appears to be composed of a thin, fragile, horny substance; and if it be opened at a very early period, it displays a kind of vascular pulp, surrounded by a soft pasty coloured matter: this paste is found to have a lamellated structure, similar to the barbs of the future feather. The formation of the feather gradually goes on within the sheath, the point of the feather perforating a channel for itself at the external end of the tube. The feather emerges from the sheath as it is formed, the sheath enlarging in bulk to make room for it, and finally dries and falls off

in shreds when its protecting agency is no longer required.

The vascular pulp contained in the sheath seems to furnish the substance of which the feather is made; it is an organised substance, which loses its vascularity when its office is fulfilled, and finally shrivels up into a membranous form. It is supposed that the fine membrane found in a shrivelled state within the barrel of a quill before the latter is made into a pen, is a portion of the dried remains of the vascular pulp; and that the scaly or membranous coat which adheres to the *exterior* of the barrel before the latter has been cleaned, is in like manner part of the dried remains of the sheath which once enclosed the vascular pulp.

The parts of which a feather consists, after being formed from the vascular pulp and the coloured substance which surrounded it, are the *barrel* or *quill*, the *shaft* or *stalk*, and the *barbs*. The barrel is a horny transparent cylinder, bearing a relation to the size of the whole feather, which is different in different birds. In the swan, the goose, and the turkey, the barrel is large in proportion to the rest of the feather; and hence the use of those quills in the making of pens. The cavity is continued a little way into the shaft or stalk, in which it is gradually lost; the distance being greater in the eagle, the hawk, and other birds of flight, than in those which do not soar so loftily: we hence see an admirable adaptation of lightness to the wants of the bird. The *shaft* or *stalk* is composed of two horny sheathes or shells attached together, and forming a hollow cavity which is filled with an opaque pith of a compact structure and a white colour. This stalk is four-sided; the outer side being smooth and somewhat convex, the inner side indented with a groove along its whole length, and the other two sides presenting a softer texture, to which the *barbs* are attached. These barbs, from their size, colour, and form, constitute the chief feature which gives a character to the feather. They are long, narrow, and thin filaments, attached at one end to the stalk, along which they are arranged at nearly equal distances. Each barb has a number of little *barbules*, or points, attached to one of its edges, in the same manner as the barb itself is attached to the stalk; and in general the barbules of one barb are interwoven with those of the next, so that the feather presents a continuous surface to the air or water. This interlacing of the barbules is destroyed when the feathers are what we term 'ruffled;' and the action by which the bird restores the feathers to a smooth state depends chiefly on the re-adjustment of the barbules among each other. In some birds, such as the goose, each barb has a convex and a concave surface, so that two adjoining barbs lie one in the other's hollow. Some feathers have barbs without barbules; some others have neither barbs nor barbules; while others again have certain peculiarities in the barbs, or barbules, or both, dependent on, or at least correspondent to, the habits of the bird to which they belong.

From the above details it will appear, that the making of pens from quills depends on the size and excellence of the barrels, that the ornamental appearance of a feather depends principally on the barbs, and that the use of feathers as a stuffing for beds depends on the softness of the barbs. The preparation of the feathers for these three purposes may now engage our attention.

Of the quills employed for the making of pens, those obtained from the goose are by far the most numerous. The geese are plucked of their feathers four and in some cases five times in the year; the first plucking, about the end of March, being for quills and feathers, and the others for feathers only. Generally speaking the quills selected for pens are the large feathers taken from the ends of the wings. The quills pass from the hands of the farmer to the quill-dresser, who is also often a pen-maker, and who supplies the stationers. In their state when plucked, they are covered with a membranous skin, resulting, as is supposed, from the decay of the sheath before alluded to; the interior vascular membrane, too, resulting from the decay of the vascular pith, adheres so strongly to the barrel as to be with difficulty separated; while at the same time the barrel itself is opaque, soft, and tough. The quill has therefore to undergo certain processes, in order to loosen the membranes within and without, and to render the barrel transparent, hard, and somewhat brittle. The quill-dresser receives the quills in large promiscuous bundles, just as they are plucked from the birds; and his first business is to sort them according to their quality. Those of the largest size and longest barrel are called *primes*, and are set aside for making the best and dearest pens; the next in point of size and quality are called *seconds*; while the smallest and shortest are denominated *pinions*.

The first process in the preparation of the quill is clarifying, that is, removing the membranous skin. The quills are plunged into heated sand, the high temperature of which causes the external skin of the barrel to crack and peel off, and the internal membrane to shrivel up. The outer membrane is then scraped off with a sharp instrument, while the inner membrane remains in a state to be easily detached. For the finest quills, the heating is repeated two or three times, care being taken not to overheat the barrel. The heat of the sand, by consuming and drying up the oleaginous moisture in the barrel, renders it harder and more transparent; and in order to give the barrel a yellow colour, and a tendency to split more readily and clearly, it is dipped in weak nitric acid. But this latter plan is considered by many to be a sacrifice of durability to beauty; as it renders the barrel brittle and unable to bear much pressure.

When the quills are dressed, the broad barbs in the inner edge are usually stripped off, to make the quills lie closer together: and they are then made up into bundles, commonly of twenty-five each, and bound up. Another mode has been adopted for dressing quills, as follows:—the barrel, having been dipped in water, is heated at a charcoal fire, and pressed or scraped flat by means of a suitable instrument: another heating swells them out again to their cylindrical form.

The mode of making a pen is too simple an operation to require description, but we may say a few words respecting a plan by which several pens or 'nibs' are procured from one pen. The stalk of the feather being cut off, as well as the extreme end of the barrel, the remainder has a small cylinder inserted in it, and is then passed through a machine provided with two cutting edges, which divide the barrel lengthwise into two halves. The edges of the two pieces are planed straight; each piece is cut into three or four, according to its length; and each of these smaller pieces is slitted, shaped, nibbed, in the form of a pen, by means of an ingenious cutting-machine.

The immense consumption of steel pens within the last few years, though it has probably diminished the demand for those made of quills, has by no means reduced it to an insignificant amount. In addition to the quills obtained from English geese, the following extract from Mr. MacCulloch respecting the importation of quills from abroad, will show the great extent of the demand:—"The goodness of quills is judged partly by the size of the barrels, but more by the weight; hence the denomination of quills of 14, 15, &c. *loths* per *mille*, each mille consisting of 1200 quills. The duty on goose-quills produced, in 1832, 4202*l.* 11*s.*, which, as the duty is at the rate of 2*s.* 6*d.* the thousand,

shows that the number of quills entered for home consumption that year must have amounted to 33,668,000." The imported quills are brought principally from Riga, Germany, and the Netherlands.

Of the *swan* and *crow* quills we need say no more than that the former, from their large size, are very durable, and fitted for large writing; while the latter, from an opposite reason, are peculiarly adapted for fine writing, as well as designing and 'pen-and-ink' drawing.

(To be continued.)

THE NAIL-MANUFACTURE.

When William Hutton, the subsequent historian of Birmingham, first approached that busy centre of the iron-manufacture, just a century ago, he was surprised to observe the prodigious number of blacksmiths' shops upon the road, and could not conceive how a country, though populous, could support so many people of the same occupation. "In some of these shops," he remarks, "I observed one or more females, stripped of their upper garments, and not overcharged with their lower, wielding the hammer with all the grace of the sex. The beauties of their face were rather eclipsed by the smut of the anvil, or, in poetical phrase, the tincture of the forge had taken possession of those lips which might have been taken by the kiss. Struck with the novelty, I inquired, 'Whether the ladies in this country shod horses?' but was answered, with a smile, 'They are *nailors*.'"

The century which has elapsed has produced some changes in this as in most other branches of manufacture; but the making of nails is still, to a considerable extent, carried on in a peculiar way, very distinct from other branches of the iron-manufacture. The nail-makers, nail-smiths, or, as they are more generally called, 'nailors,' inhabit certain districts, scattered perhaps over a considerable space, and working together in parties of two, three, or even whole families of both sexes, in little smithies, fitted up with bellows, a hearth, a small anvil, and a few other simply-formed tools. Sometimes, to economise coals, shop-room, &c., two or three nailors occupy but one hearth, using the same fire and the same bellows in turn; and in all such cases the price obtained for the nails, or for the labour expended in their manufacture, is divided among the nailors in certain agreed proportions. It will be seen that this system differs considerably from the large factory or foundry system by which the majority of iron articles are manufactured.

Mr. Hutton, in speaking of Birmingham as it was sixty years ago, says—"The art of nail-making is the most ancient among us. We may safely charge its antiquity with four figures. We cannot consider it a trade *in*, so much as *of* Birmingham; for we have but few nail-makers left in the town: our nailors are chiefly masters, and rather opulent. The manufacturers are so scattered round the country that we cannot travel far in any direction out of the sound of the nail-hammer. But Birmingham, like a powerful magnet, draws the produce of the anvil to herself."

Nails are of various kinds, according to the purposes for which they are used; but all those which are known as *wrought* nails are worked with the hammer or some analogous engine; whereas those called 'cut' are shaped by a cutting instrument. For the wrought nails, iron of a cheap quality is used, which is first passed through a rolling-mill, to reduce it to the state of a thin bar, and then slit up by means of grooves in slitting-rollers, into small rods, having a width and thickness proportionate to the size of the nail. These rods, which are called nail-rods, are a considerable article of trade; and the nailors obtain the iron in this form, to be converted into nails by them, with the aid of their wives and children. The bellows employed are usually lightly loaded, so that a very small motion given to them now and then will blow sufficiently to heat the rods; two, three, or four of which, according to their size, are kept in the fire at once.

Supposing the end of a rod to have been sufficiently heated in the fire, the nailor takes it out and proceeds to form the point of the nail. The anvil upon which he works is a small cube of steel, with a surface of but a few inches in extent, and is inserted into a wrought or cast iron block weighing from one to two hundred-weight; the whole of this larger mass being generally surrounded with stones and imbedded in smithy-slack, so that only the small anvil is seen. On this anvil, by a few strokes of a peculiarly shaped hammer, the end of the rod is wrought so as to form the point of the nail; and the next operation is to cut off a piece of the rod sufficient in length to form the nail. An upright chisel, called a hack-iron, is provided with a stop or check, fixed at a certain distance from its edge: so that the point of the rod being applied to this stop, and another part a little distance from it being made to rest on the edge of the chisel, a single blow cuts off a piece of iron of the required length for the nail, equal to the distance between the edge and the stop. The nail falls into a tin pan beneath; and if it be large, the rod requires a second heating before a second nail can be wrought from it; but if small, the nailor can at once form a second nail before the rod becomes too far cold. He then returns the end of the rod to the fire; and while it is reheating, he proceeds to form the head of the nail which he has just cut off. He employs for this purpose an instrument called a *bore*, consisting of a piece of strong iron, ten or twelve inches in length, near each end of which is a knob or swell of steel perforated to the size of the shank or collar of the nail, and countersunk so as to correspond with the shape, size, and pattern of the head. By having *bores* with perforations of different kinds, the nailor is enabled to form nails with the various shaped heads. The bore, when out of the workman's hand, is placed beside the anvil in two brackets; and when he wants to use it, he takes up the nail with a pair of tweezers, and introducing its point into one hole of the bore, strikes a blow or two on the protruding end, by which a head is formed, receiving its shape from that of the countersunk hole.

These apparently simple processes are conducted with surprising rapidity; as the nailors, by long practice, acquire a mechanical habit of forming a complete nail by a certain number of strokes, so as never in the course of an hour to make an unnecessary movement. The extraordinary quickness which this mechanical habit engenders may be strikingly illustrated by an example which occurred a few years ago, and which was communicated to one of the public journals. A nailor undertook, for a trifling bet, to make seventeen thousand double flooring nails per week, for two successive weeks; the nails weighing twenty pounds the thousand. The workman finished his first week's task by three o'clock on Saturday afternoon; resumed his labour on Monday morning, and concluded his second week's task with even more ease than the first. A curious analysis has been given of the muscular exertion involved in this performance. "Those who do not understand the nature of the work may form some idea of the undertaking when they are informed that the above quantity is allowed to be as much as three ordinary men can perform without difficulty; and that allowing twenty-five strokes of the hammer (which is two pounds weight) to each nail, including the cutting of the rods into a size convenient to be handled, and re-uniting them when too short, there were no less

than 1,033,656 strokes required before the task could be completed. In addition to this, the workman had to give from one to three blasts with his bellows for every nail he made, had to supply the fire with fuel, and had to move from the fire-place to where the nails were made, and *vice versâ*, upwards of 42,830 times."

The hammer used by the nailors is larger or smaller, according to the size of the nails to be formed; its usual form is the frustrum or large end of a cone, the smaller end being the face, which, instead of forming a horizontal plane, as in the case of an ordinary hammer, is inclined or sloped considerably towards the handle. The degree of this obliquity, the weight of the hammer-head, the size and shape of the handle, &c. are matters of nice consideration; one nailor being rarely able to work comfortably with another man's hammer; hence, wherever the workman may go, in his search for employment, he takes his hammer with him.

The modes in which nails have been proposed to be produced by machinery are very various; but these are not so successful as was at first hoped for, principally from this reason, that the hammering given to a nail in the common process of making imparts to the iron a degree of density and durability which it does not possess without that operation. One method proposed has been, to apply water-power to the working of the hammer, the other operations being performed as before described. Another method is, to have a die, or an impression of the nail to be cut, formed in one or more pieces of steel; the iron of which the nails are to be formed, being drawn or rolled into the proper form and thickness, is pressed by a mechanical force into the cavity of the die, so as to form the nails either complete, or so nearly complete that they could be finished with very little labour. A third method is, to have two steel rollers of equal diameter, one half the impress of the nail being cut in one roller, and one half in the other, whereby the two impressions form a cavity or die of the exact form of a nail; when the two surfaces are cut all over in this way, brought into contact, made to rotate, and a plate or rod of iron applied to them, the metal will be formed into a kind of sheet of nails, slightly adhering one to another by edges which may easily be separated. These three methods are but representatives of numerous others, some of which have been patented, some have failed in producing the required results, while others have been wholly or partially acted on.

A kind of nail which has come into extensive use in modern times is the *cut brad*, procured by cutting sharp pointed nails from a sheet of iron. The manner in which these were first made was this:—The iron was rolled out into large thin sheets, of the proper thickness to form a nail; this was cut up by strong shears into parallel strips or ribands, the width of which was equal to the length of the intended nails. From these slips the nails were cut off one by one by means of a fly-press; the cutting lines being alternately turned in opposite directions, so that the head of one nail was cut from the same edge of the slip or riband as the point of the next. The cutting apparatus consisted of two parts, one applied beneath and the other above the slip of iron; the part beneath being a bar of steel set up edgewise, with one of the angles of its upper side ground to a sharp straight edge; and the part above being a kind of punch capable of vertical motion. The workman, seated before the press, held the handle of the fly-press in the right hand, and the slip of iron in the left; by pushing back the handle, the punch was raised; and after placing the slip upon the cutting edge, and drawing forward the handle, the pressure of the punch cut out a piece of iron in the form of a nail. A second series of similar movements cut out a second nail, the slip of iron being first turned over, to bring the other side uppermost, by which the bar was at the second time cut with an inclination in an opposite direction to the former, so that the tapering form of the nail did not involve any loss of material. The manner in which this process may be modified by an improved application of mechanical power, so as to cut several nails at a time instead of one, may be conceived without much difficulty; and we need not therefore detail any elaborate methods actually in use.

Nails furnish one among the many instances afforded in our manufactures, of the enormous extent to which an apparently trifling article influences the consumption of raw material. Besides the very large amount employed for home consumption, there were, between the years 1821 and 1831, nearly four thousand tons of nails annually exported from England,—very nearly nine millions of pounds weight!

Manners in Asia Minor.—The interest of our halt was greatly increased by our observing an almost uninterrupted train of cattle and people moving from the valleys to the cool places for the summer season—the *yeilassies*. I was much struck by the simplicity and patriarchal appearance of the several families, which brought forcibly to mind the descriptions of pastoral life in Bible history. . . . In advance of the pastoral groups were the straggling goats, browsing on the fresh blossoms of the wild almond as they passed. In more steady courses followed the small black cattle, with their calves, and among them several asses, carrying in saddle-bags those calves that were too young to follow their watchful mothers. Then came the flocks of sheep and the camels, each with their young; two or three fine-grown camels bearing piled loads of ploughs, tent-poles, kettles, pans presses, and all the utensils for the dairy; and amidst this rustic load was always seen the rich Turkey carpet and damask cushions, the pride even of the tented Turk. Behind these portions of the train I must place, with more finish, the family—the foreground of my picture. An old man, and generally his wife, head the clan, which consists of several generations; many of them must have seen near fivescore summers on the mountains: the old man, grasping a long stick, leads his children with a firm step. His son, the master of the flocks, follows with his wife; she is often seated on a horse, with a child in her arms; and other horses are led, all clothed with the gay trappings of a Turkish steed. Asses are allotted to the younger children, who are placed amidst the domestic stores, and never without a pet cat in their arms: long tresses of hair hang down their necks, and are kept closely to the head by a circlet of coins. By their side walks the eldest son, with all the air and alacrity of a young sportsman: over his shoulder hangs a long-barrelled gun, in his hand is the cage of a decoy partridge, and a classic-looking hound follows at his heels: a number of shepherd-boys mingle with the flocks and bring up the rear. The gay costume, the varied noises of the cattle, and the high glee attending the party on this annual expedition, must be supplied by the imagination. I should think that twenty families passed in succession during our halt, few of them having less than one hundred head of stock, and many had more. In some families, attendants, servants or farming-labourers, were among the cattle, generally with their aprons tied around them, in which they carried two or three young kids: they had often over their shoulders a small calf, with all its legs held together on the breast, exactly as seen in the offerings on the bas-reliefs at Xanthus and elsewhere. The longevity of the people in this pastoral country is very remarkable. I am sure that we have seen at least twenty peasants within the last two days above a hundred years of age, and apparently still enjoying health and activity of body: in some instances the mind appeared wandering. An old-looking hag, screaming violently, seized my servant Maria, and asked if he was come to take away her other child for a soldier; for if he were gone, she should have none left to take care of her. The temperate habits of the Turks, as well as some of their customs, may in part account for the prolongation of life in this country. One custom I may mention as tending to diminish the cares of age, and to show the excellence of these simple people. When sons grow up and marry, the father gives over to them his flocks and property, and trusts to the known and natural affection of his children to take care of him in his declining years: to a son his parents are always his first charge.—*Fellows's Second Excursion in Asia Minor.*



[a, Pouter Pigeon; b, Carrier Pigeon; c, Jacobin Pigeon; d, Ringdove; e, Rock Pigeon; f, Fan tailed Pigeon; g, Nun Pigeon; h, Tumbler Pigeon. At top, several varieties.

THE DOMESTIC PIGEON.

THIS beautiful bird, which time immemorial has been reclaimed by man, is familiar to all. Its varieties are even more numerous than those of the common fowl; some of them are remarkable for their singularity of appearance, and others for their elegance.

At what period man added the pigeon to the list of his domestic feathered retainers is not very clear; but that it was at a very remote epoch is certain. We find references to it in the classical writers; and we know that it was among the clean animals according to the law of Moses. In the East the dove or pigeon has always been regarded with favour; and the expedient of employing it as a carrier of letters or written messages was often practised: its rapidity of flight, its almost unerring instinct in finding its way home, and the eagerness with which it returns to its dwelling, recommending it for such a use.

But before noticing the habits and manners of our domestic pigeon, we ought to glance at its origin, and this the rather as the point has been involved in no little confusion.

In Europe we have the following wild species of the genus Columba: the Ringdove, Cushat, or Queest (*Columba Palumbus*); the Stockdove (*Columba Ænas*), the Rockdove (*Columba livia*); and the Turtle-dove (*Columba Turtur*).

The Ringdove is the largest of our wild pigeons, and is common in the wooded districts of our island, as well as of the greater portion of Europe. In the winter it assembles in numerous flocks, which resort to the stubble-lands in quest of food. It devours all kinds of grain, peas, beech-mast, acorns, berries, and the green leaves of the turnip. During this season of the year its numbers are often increased by the arrival of flocks from the more northern parts of Europe; but in our island, and in France and the southern countries, it is not migratory. No naturalist has regarded the ringdove as identical with the domestic pigeon. Its mode of building its nest, a flat platform of twigs laid crossways on the fork of a branch—its size—its refusal when in captivity to breed with the pigeon—and the failure of every attempt to reduce it to a state of domestication,—are of themselves, setting aside colouring, sufficient proofs of specific distinctness.

Still more remote from the common pigeon is the Turtle-dove, a bird of passage, and one of the spring visitors to our shores, "when flowers appear on the earth, and the time of the singing of birds is come." In September the turtle leaves our shores for a warmer climate. Colour, size, and habits clearly separate the turtle from the pigeon. We have then two other species, the Stockdove and the Rockdove.

The Stockdove derives its name from being, as was presumed, but erroneously, the stock to which the common pigeon is referrible. This error arose, no doubt, from our early ornithologists having confounded the stockdove with the rockdove, and so mixed up the history of both. Montague, in his 'Dictionary of Ornithology,' confounds these birds together, deeming the *Columba livia* and the *C. œnas* to be identical. His description however refers to the *C. livia* (Rockdove); and it would seem that he was unacquainted with the true *C. œnas*.

White, in his 'History of Selborne,' well distinguishes the stockdove, and the "small blue rock-pigeon;" observing, that "unless the stockdove in winter greatly varies from itself in summer, no species seems more unlikely to be domesticated and to make a *house-dove*. We very rarely see the latter settle on trees at all, nor does it ever haunt the woods; but the former, as long as it stays with us, from November perhaps to February, lives the same wild life with the ringdove; frequents coppices and groves, supports itself chiefly by mast, and delights to roost in the tallest beeches. Could it be known in what manner the stockdoves build, the doubt would be settled with me at once, provided they construct their nests on trees, like the ringdove, as I much suspect they do."

From this it appears that White had only a partial degree of information respecting the stockdove. This bird is indigenous in our island breeding in the woods; but its localities are circumscribed. In winter the flocks are increased by accessions from the northern provinces of Europe; but these visitants depart in spring. The same circumstances occur in the instance of many other birds: as the thrush and the lark, of which our native flocks are joined in winter by arrivals from higher latitudes.

In our island the stockdove limits its range almost exclusively to the midland counties, and is common in Hertfordshire. It is rarely seen in the southern or western counties, and still more rarely in the northern. This bird makes an artificial nest of twigs in the holes of decayed and timeworn trees, and in cavities on the top of pollards, but never places it on the forked or spreading branches of a tree. As is the case with all the dove tribe, its eggs are two in number.

The stockdove is not only found in Europe, but in the northern provinces of Africa, and in various parts of Asia. We have seen specimens from the neighbourhood of Trebizond and Erzerum, where it is said to be common.

In a 'Catalogue of the Birds of the Dukhun,' by Colonel Sykes, is included the stockdove. We are informed that the Mahrattas term it *Parwa*. It is "the most common bird in the Dukhun, congregating in flocks of scores, and a constant inhabitant of every old dilapidated building." Colonel Sykes saw the same species, on board ship on the voyage to England, brought from China.

Some differences in the colouring noticed by Colonel Sykes, taken in conjunction with his statement that it inhabits old dilapidated buildings, induce a suspicion that the Dukhun stockdove differs specifically from that of Europe and Western Asia. The stockdove in Europe is a tenant of the woods.

Selby thus details the colours of the stockdove: "Head and throat deep bluish grey; sides of the neck glossed, with different shades of green and purple; the feathers shorter and more distinct than those of the rockdove; lower parts of the neck and breast pale lavender purple; belly, thighs, and under tail-coverts bluish grey, with a slight purplish tinge; back deep bluish grey; wing-coverts paler, and some of the greater ones spotted and barred with black, but not forming any defined bar as in the above-mentioned species. Quills blackish grey, the outer webs near the base of the feathers passing into bluish grey; lower part of the back and tail-coverts bluish grey; tail bluish grey, with a broad black bar at the end, and having the outermost feather margined with white; iris brownish red; legs and toes bright cochineal-red."

As we have already stated, the stockdove has been confounded with the rockdove, and the characters of the latter have been consequently given as those of the former. The rockdove, however, is a totally distinct species, and its habits are unlike those of any other of our Columbæ. As its name imports, it frequents rocks and precipices, especially along the sea-coast, and is far from being uncommon. It is partial to deep caverns, in which it breeds. It haunts the caves in the cliff at St. Abb's Head, on the Berwickshire coast; those in the Isle of Bass; of Caldy Island, South Wales; and of the wild precipices of the Orkneys. We have seen it frequenting the steeples of churches near the coast, and have remarked numbers inhabiting the holes and crevices in the higher parts of Canterbury Cathedral. In the latter instances it may be said that the birds are merely the emancipated descendants of our domestic breed. If so, with their freedom they have regained their genuine colours in most instances.

We have seen many specimens from Northern Africa and Western Asia. Selby states that it is numerous in the rocky islands of the Mediterranean, where it lives and breeds in caverns on the shore; and is equally abundant in the north of Africa, especially in the island of Teneriffe, where it is met with in incredible numbers.

The rockdove is more slender than the stockdove, and is astonishingly rapid in flight. It may at once be distinguished from the latter by the white colour of the lower part of the back, and the two distinct bands of leaden-black across the wings. These distinctive marks are found in our ordinary dovecote pigeons; and when in the fancy kinds they become, by the breeder's art, imperceptible, they are ever ready to return, and hence one of the difficulties of keeping up a particular fancy stock. It is, then, to the rockdove, a species almost universally spread in its wild state throughout the Old World, that the domestic pigeon and its varieties must be referred. All these varieties breed with each other, and with the wild rockdove; and

without due care, all soon degenerate, as it is termed, and acquire the original form and colouring.

Many of our varieties are very beautiful, and they all present peculiarities of manner and flight, well known to those who take pleasure in them. The Carrier, originally from the East, is distinguished by a long bill, with large fleshy caruncles at the base, and a naked space round the eye; the colour is either black or blue. This variety possesses great powers of flight: having mounted to a considerable elevation, it directs its course in a straight line to a great distance, and then returns home. We had once a pair, purchased from a breeder, which, on first being let out of the pigeon-house, where they had been confined for about a fortnight, flew in a direct line till out of sight: we supposed them lost; in about four hours, however, they returned, and settled upon their domicile, which they had, till that day, never before quitted.

The Tumbler is distinguished by flying in circles and throwing itself over backwards, so as to perform a sommerset in the air: before settling, this evolution is often performed several times in succession. A flock of tumblers in exercise is a very pretty spectacle.

The Fantail is distinguished by the arrangement of the tail-feathers like those of a fowl: their number is often sixteen or eighteen. This variety is usually white. The males have a peculiarly vibratory motion of the neck, and walk very elegantly. As respects powers of flight, this variety is very inferior.

The elevated figure, feathered legs, and distended crop of the Pouter, render him conspicuous—not elegant. The Jacobin is a small pigeon, mostly of a rusty-yellow, with a frill of reverted feathers down each side of the neck to the chest.

The Nun is a beautiful variety of a pure white, excepting the head, quill-feathers, and tail, which are black. We might thus proceed to a great length in the mere enumeration of varieties, of which there are at least five and twenty distinguished by their peculiarities; but we will pass on to consider one remarkable character of the pigeon, before alluded to—its instinctive mode of discovering its own abode, and return to it, when carried to a great distance away. It is evident to all conversant with the pigeon, that it has the strongest affection for its own home—an instinctive *Nostalgia*, which in old birds can scarcely be eradicated by time; confined for weeks or months—on gaining their liberty, off they fly to the "old familiar spot," and if taken away again, still return on the first opportunity. Young birds are much more easily reconciled to a change of tenement, and soon learn to regard the new place as their own. It is this desire—this longing for home, which impels the pigeon carried to a distant spot and turned loose, to attempt to regain it; and regain it the bird does, at least in general; but the query arises—how does it know in what direction its home lies? how does it know which way to direct its rapid course? If the distance be short, we can easily conceive that the bird making wide circles at a great elevation may at one part of the circle discern some known object, which will at once indicate the direction to be followed. A circle of three or four miles would give the bird the command of a very wide extent of country; and a tall object, as a spire, previously visited voluntarily, or seen from its abode, would afford the desired clue. This perhaps may account in ordinary cases for the return of the pigeon to its home; but it will not account for the return of the bird from great distances. We hear of pigeons being brought from towns on the Continent, as Brussels, &c., and set at liberty in London; and of their return in a comparatively short space of time, few of the number failing to find their way. Trials of this kind have been often repeated; and unless the weather proves misty, or fogs hang over the sea, the birds cross the Channel safely, and regain their home. That they are sometimes dispersed and lost in foggy weather proves that they use their sight in pursuing their homeward course, but still the difficulty remains—how is that course determined? The same difficulty meets us in the migration of the swallow. Its winter abode is Western Africa. It finds its way to the African shores, and returns again to Europe: but what is more, the same pair will steer not only for England, but for the very chimney or barn which they habitually tenant as their summer breeding-place; and it is probable that they visit a determinate spot in Africa. It is one of the facts in natural history, which we must be content to leave unexplained.

The habits of the domestic pigeon are too well known to need detailing. The wild rockdove, which, like its tame relatives, pairs with a single mate, and contracts a permanent union, breeds twice or thrice a year; the domestic race, however, breed oftener; and the male and female relieve each other in the wearisome duty of incubation. At this epoch the crop of both becomes highly vascular, and secretes from certain glandular follicles dispersed over it a white milky fluid in great abundance. It is with this fluid that the newly hatched young are fed for the first three days exclusively; afterwards the usual grain is added: and less and less given of the milky secretion, which is suppressed by the eighth day, counting from the time of hatching. The flesh of all the pigeon tribe is excellent, and that of young birds of the domestic stock is in high estimation.

The following pigeons and varieties are represented in the engraving: the Ringdove, the Rock-pigeon, (var.), the Carrier, the Jacobin, the Nun, the Pouter, the Tumbler, and the Fantail.

FEATHERS—THEIR NATURE AND USES.

(Concluded from p. 359.)

We now proceed to notice the manner in which feathers are prepared as decorations for the head. The *plumassier* is the operator who undertakes this preparation. As the ostrich-feather is one of the most valuable of the feathers employed in this way, a notice of the mode in which it is prepared will serve as a general representative of the whole; but the mode of procuring the feathers must be first briefly noticed.

One of the most remarkable points in the African ostrich is the beauty of the plumage, particularly of the long feathers that compose the wings and the tail. It is chiefly to obtain these feathers than man has been so active in the pursuit of these birds. The feathers were prized centuries ago, for the ancients used them as ornaments for their helmets. At the present day the ostrich-feather is deemed an article of luxury, as well in the East as in Europe; and the Arabs of the desert are incited to the pursuit of the birds for the profit derived from the feathers. An ostrich in actual motion can outrun the fleetest horse, but the Arabs succeed in catching them by a well-concerted plan. The Arab, mounted on a horse trained for the purpose, gives chase to an ostrich which he may chance to see in the desert, and manages to keep him constantly in view, taking care not to push him so close as to make him escape to the mountains, but at the same time so as to prevent him from taking food. This is the more readily effected, as the bird takes its course in a wavering and circuitous direction, which is greatly shortened by the hunter, who comes upon him by a direct path. Thus they continue two or three days, the hunters relieving each other by turns, until the ostrich becomes exhausted by fatigue and famine, when he is killed with clubs by the hunters, who are careful not to soil the feathers with the blood of the poor animal. The feathers, for

the obtaining of which this hard chase is run, are plucked from the bird, and made an article of commerce. On their being brought to England, a duty of ten shillings per pound is paid on them in the undressed state; and if imported after dressing or preparation, the duty is much higher.

The feathers are assorted into various classes, according to their quality. Those taken from the back and above the wings are deemed the best; those from the wings are ranked next; while those from the tail are ranked as least valuable. The finest white feathers of the female ostrich generally have their ends a little greyish, which lessens their lustre, and renders them rather less valuable than those of the male. The ostrich-down, which is black in the male and grey in the female, is merely the feathers of the other parts of the body, varying from four to fourteen inches in length.

According to the account of Dr. Ure, in his new Dictionary, the mode of preparing the feathers for use is as follows:—Four ounces of white soap, cut small, are dissolved in four pounds of water, moderately hot, in a large basin, and the solution is made into a lather by beating with rods. Two bundles of the feathers, tied with packthread, are then introduced, and are rubbed well with the hands for five or six minutes. After this soaping they are washed in clear water as hot as the hand can bear. The feathers being thus brought to a clean state, they undergo three successive processes, for the purpose of whitening or bleaching them. In the first place they are immersed in hot water mixed with Spanish white, and well agitated in it; after which they are washed in three successive waters. In the next place they are *azured* by being passed quickly through a bath of cold water containing a little indigo tied up in a fine cloth. Lastly, they are *sulphured*, in the same way as straw hats are done; a process, one mode of performing which is as follows:—A cask, open at both ends, with its seams papered, is set upright a few inches from the ground, having a hoop nailed to its inside about six inches beneath the top, to support another hoop with a net stretched across it, on which the straw or the feathers are laid. The cask having been covered with a tight overlapping lid stuffed with lists of cloth, a brazier of burning charcoal is inserted within the bottom, and an iron dish containing pieces of brimstone is put upon the brazier. The brimstone soon takes fire, and fills the cask with sulphurous acid gas, whereby the straw or the feathers become bleached in the course of three or four hours. Sulphuring chests are often used instead of this simple apparatus, but the principle of action is the same.

The feathers, having been bleached in some such way as this, are dried by being hung upon cords, the fibres being opened by shaking at intervals. The ribs are then scraped with a bit of glass cut circularly, in order to render them very pliant; and the filaments are made to assume the curly form so much admired, by drawing the edge of a blunt knife over them. Those which are of a dingy colour are died black by a strong decoction of logwood aided by copperas. Feathers, from whatever bird they may be taken, are dyed by the aid of ingredients similar to those employed in other departments of dyeing. A rose-colour or pink is given by safflower and lemon-juice; a deep red by a decoction of Brazil-wood; a crimson by a similar dye, followed by a decoction of cudbear; blue by indigo; yellow by turmeric or weld; &c. After all such processes of dyeing, the feathers are well cleansed, rinsed, and dried.

We must now pass on to give a brief notice of the employment of feathers as a stuffing for beds. To what period we may trace the first application of feathers to this purpose is not easily determined. The ruder nations of antiquity probably slept at night on the skins which formed their clothing by day; and in process of time these skins were replaced, as a material for a bed, by loose rushes, heath, straw, &c. Bed-cases or ticks, filled with chaff, heath, or straw, were used by the English gentry five or six centuries ago. But it appears by a statute passed in the reign of Henry VII., that feather-beds were then commonly in use in England; for certain precautions are therein ordered to be taken as to the feathers selected, for instance, no feather-beds were to be sold if any scalded feathers were mixed with the dry-pulled feathers; no down-beds, if fen-down was mixed with clean down; no beds, mattresses, or cushions, if stuffed with horse-hair, goat's hair, or neat's hair. The reason assigned for these prohibitions was, that scalded feathers and fen-down (down obtained from geese reared in the fens of Lincolnshire) and animal hair were prejudicial to the health of his majesty's liege subjects.

Goose feathers are usually assorted into white and grey, the former bearing a higher market-price than the latter. Those feathers known as "poultry feathers," such as those obtained from turkeys, ducks, and fowls, are of lower value; not from any deficiency in the quality of softness, but because their elasticity is not equal to that of goose feathers. The feathers of the wild-duck are said to be both soft and elastic; but the disagreeable odour of the oil contained in them is so retentive that it is with difficulty removed. A small quantity of lime mixed with the feathers tends to their preservation, by combining with the oil which they contain, and also by preventing the putrefaction of the small portions of animal fibre which occasionally adhere to them.

As an example of the mode in which feathers are cleaned for beds, we may give the following, for which the Society of Arts awarded a premium some years ago:—Quicklime and clean water are mixed together, in the proportion of one pound of lime to every gallon of water; and when the undissolved lime is precipitated in fine powder, the clean lime-water is poured off for use. The feathers which are to be cleaned are put into a tub, and the lime-water is added to the depth of three inches, in which the feathers are well steeped and stirred. After remaining in this state three or four days, the feathers are taken out of the foul water, laid on a sieve to drain, washed in clean water, and then laid upon nets similar to cabbage-nets, where they are left to dry. While lying on the nets, the feathers are shaken from time to time, to aid the admission of air, by which the drying is effected. The final process is to beat them, by which the dust is separated from them.

We may here remark that the *down* spoken of above, and which has become a kind of symbol of softness, is the assemblage of very fine feathers taken from the breasts of birds. Of these the most valuable is that obtained from the eider-duck. The birds pluck it from their breasts, and line their nests with it; and the down obtained in this way, called live-down, is more valuable, because more elastic, than the dead-down plucked from the animal when dead. In Iceland and Norway this kind of stuffing for beds is very much used, and is spoken of by travellers as forming one of the most delightful of all beds. Generally the sleeper lies on one bed, and has another, made rather thin, placed on him, in lieu of what we should term bed-clothes. The down, from its great lightness, does not produce any inconvenient pressure on the body; while from its being such a non-conductor of heat, the natural warmth of the body is not abstracted during sleep, however rigorous may be the temperature of the room.



THE DANUBE.

(Concluded from page 351.)

Near Vienna a great change takes place in the appearance of the river. The rocks through which it has so long been compelled to find a tortuous passage disappear; the mountains recede, leaving on both sides a considerable plain; and the chafed and troubled waters, sinking into comparative rest, divide and playfully wind through innumerable channels, and round many a pleasant island they have thus formed. It is, however, still so rapid that it can only be navigated agreeably and economically in its downward course. In its passage into the kingdom of Hungary, between Haimburg and Presburg, it is skirted by the Leitha range of the Noric Alps on the right, and by the lesser Carpathian mountains on the left. From hence steam-vessels frequently meet the eye passing to and fro betwixt Vienna and Constantinople. The inhabitants of Presburg, the once flourishing capital of Hungary, hope much from the introduction of steam on the Danube. This antient town is finely situated on a hill commanding an extensive view over the plain watered by the great river, which is here crossed by a bridge of boats three hundred and sixty-five paces in length. Although Ofen or Buda is now the seat of government, the king is still crowned at Presburg, and the ceremony is followed by a very peculiar custom:—As soon as the monarch is crowned in the cathedral, he rides to an artificial hill or mound of inconsiderable height, and brandishing his sword towards each of the four cardinal points, thereby intimates to the world that he will defend the kingdom against its enemies from whatever quarter they may come. From Presburg to Comorn, the Danube flows through two channels (the northern receiving the river Waag, and the southern the Raab), which enclose the island of Schutt, measuring not less than fifty miles in length, and from four to nine in breadth. At the eastern end of the island the channels unite, and then pursue their course between the mountains of the Bakony forest, and the base of those of the Carpathian range. At the point of junction of the channels, and immediately opposite the afflux of the Waag into the Danube, is the royal free town and maiden fortress of Comorn. The latter promises long to maintain its virgin reputation, if we may judge of its fate by the strength of its fortifications. The fortress was built by Mathias Corvinus, king of Hungary; it is defended by extensive works and têtes-de-pont on both banks; and the great original strength of the place has been still further enhanced by the additional works erected in the present century. Comorn, like Presburg, has a bridge of boats; it has in addition a flying bridge. At Gran, like Comorn, a royal free town, we find another strong fortress, standing on a rocky island in the river, which has undergone several sieges. We now pass rapidly on to the more interesting parts of the Danube, namely, the portion lying between Pesth and Vidin or Widdin. Pesth, the most distinguished city of Hungary both for commerce and population, is on the left bank, and immediately opposite, on the other side of the river, is the city of Ofen or Buda. The two places are connected by a bridge of forty-seven large boats, united by chains, and floored with planks, one thousand five hundred paces long. Pesth looks picturesque from the Danube, being for the most part well built, and enjoying so pleasant a site. Buda is nearly as populous as Pesth, and still more romantic in in its appearance. It is said to derive its name from a

brother of Attila, who made it his place of residence, and greatly improved it. It is built round the Schlossberg mountain, in the midst of a hilly and beautiful country, encircled on three sides by vineyards and forests. The central part of Buda is enclosed within what is called the fortress, and, rising on all sides round the acclivities of the Schlossberg, is defended at the foot of the latter by walls and bastions. The fortress contains a royal and several other palaces, two large churches, various great public edifices, and several handsome squares. Near the Schlossberg rises a much higher rock called the Blocksberg, on which is an observatory. Leaving Buda and Pesth, one is struck by the curious flour-mills of the Danube, which consist of a wooden house erected in a large unwieldy boat moored near to the most rapid part of the stream. Parallel to this, and only a few paces distant, is fixed a smaller boat; the heads of both being directed down the stream. Between them is suspended a water-wheel, which of course revolves rapidly with the flow of the river. Ten or twenty of these are sometimes found in succession. Not far from Pesth we pass the large island of Ratoykovi, sprinkled with neat and prosperous looking villages, and clothed with luxurious forests. On the right extends one of those apparently boundless plains which are so striking a geographical feature of Hungary. Beyond this extensive tract of pasture-land, with its large flocks of sheep and droves of oxen, appear vineyards on every side, separated by hedges teeming with the blossoms of the lilac and barberry. Tobacco also is largely grown, and a small quantity of saffron. Passengers by the steam-boats find great amusement in noticing the manners and costume of the Hungarian peasantry drawn to the banks by the attraction of the new wonder of navigation. Both men and women are well looking. The former are lightly clad in shirts, waistcoats, and loose trowsers, all made of coarse canvas, and the trowsers in particular looking at a little distance like petticoats. Sandals defend their feet; the legs are stockingless. As to the women, they do not even wear the sandals. Their head-dress consists simply of a blue handkerchief tied under the chin; their gowns are of blue, red, or green calico; and a profusion of different coloured necklaces of glass or coral complete the picture.

Mohacs, an insignificant village, is only of interest as being the scene of a great battle fought between the Hungarians under Louis II. and the Turks commanded by the great Solyman, where the former were defeated with great slaughter, and their king miserably perished in endeavouring to escape. His horse fell back whilst crossing a deep marsh, and the unfortunate monarch, loaded with heavy armour, was suffocated. From Mohacs the scenery of the Danube is for some distance comparatively insipid and uninteresting, but as we approach Peterwardein it improves, and we find upon our right undulating and forest-clad hills, villages prettily situated on the minor eminences, and church spires issuing from masses of green foliage, and "pointing with silent finger unto Heaven."* Peterwardein is the frontier and principal fortress of Slavonia, the territory into which we are advancing, and from its strength and situation has been designated the Gibraltar of Hungary. It stands at one of the angles which the Danube is so fond of making, and on the right bank. The upper fortress and the horn-work appear on a rock isolated on three sides, and the lower, which includes the town, at its northern foot or base. The waters of the Danube wash the walls on the west and south sides. It possesses a well, excavated right through the rock down to a spot lower than the Danube. It is defended on the only accessible side by very broad and deep moats; and is so large that a garrison of ten thousand men can be accommodated within its walls. A bridge of boats over the Danube, which is here seven hundred feet wide, and from fifty to sixty deep, connects Peterwardein with the opposite town of Neusatz. Near Semlin, the next place of any importance, was fought the decisive battle of Salankement, between the grand-vizier of Achmet, the brother and successor of Solyman, (a poet and musician as well as a monarch), who commanded the Turkish army, and Prince Lewis of Baden, who led the Imperialists. The result was the defeat of the Turks, with the loss of twenty-five thousand men, one hundred and fifty-four pieces of cannon, ten thousand tents, innumerable camels, mules, and other beasts of burden, and many chests of silver and copper money. A place still more distinguished in military annals next meets our gaze—Belgrade, with its splendid mosques, tall minarets, domes, gardens, and cypress-groves. It stands in a most noble situation, where the waters of the Save and the Danube join. "These two majestic streams, blending their waters at this point, expand into what might be mistaken for the ocean itself, and the spot where the Save pours itself into the queen of European rivers is clearly perceptible from the diversity of the tints."* Belgrade was founded by the Romans, afterwards destroyed by the barbarians, and then rebuilt by Justinian. The citadel is a commanding object, standing as it does on a steep hill one hundred feet high, and jutting out into the waters of the Danube. This is the source of many a Turkish atrocity towards Christian captives. Rhigas the Greek was here sawed asunder limb by limb; and so late as 1815, thirty-six unhappy Servians were impaled alive, in violation of a pledge given as to their safety. Belgrade is the seat of a pasha of three tails, and of the only garrison that the Turks, in pursuance of their treaty with the Servians, can maintain in the country. The immense fortifications are now fast mouldering away. The history of Belgrade is too full of great events for us to attempt even a bare enumeration of them, so we prefer occupying our space with a brief glimpse of the very interesting town. This is composed partly of "lines of modern houses, but in general of rows of wooden stalls, in which the owner arranges his merchandise with no small degree of taste, and parades his customers, surrounded by his workmen intent upon their several tasks. The barber and coffee-vender alone carry on their trade in closed shops, and enjoy the luxury of glazed windows. To any traveller fresh from Western Europe the motley population of this town is a novel and highly interesting scene; the tailor and the gunsmith, the baker and the victualler, by their white turbans, sallow sombre faces, and haughty mien, will be instantly recognised as Turks; the red cap, sharp eye, and insinuating manners of the merchant and dealer betray their Greek extraction; and the merry countenance of the shopkeeper smirks beneath the round close bonnet of the native Servian."†

At no great distance from Belgrade we find the commencement of several groups of islands, densely covered with osiers and evergreen shrubs, and peopled with many varieties of water-fowl. Some of these are exceedingly beautiful. The variety of their forms, their numerous inlets, their clusters of magnificent shrubs hung with flowers, among which one might fancy we perceive some of the sweetest and most brilliant of our English hedgerows and gardens, the deep solitude interrupted only by the screams or occasional flight of strange-looking birds, all make up a scene on which the voyager delights to dwell. From hence "a field of Indian corn, hills deeply indented by the rains, and exhibiting sometimes the appearance of artificial fortresses, sometimes retiring to a distance

* Frickel's 'Pedestrian Tour.'

† 'Penny Cyclopædia,' article 'Belgrade,' vol. iv.

and leaving in front abrupt mounds of the most fantastic shapes; villages with their churches and steeples on one side, and churches and minarets on the other; Servians on our right fishing in little cockle-shells of boats; Hungarians on the left tending herds of swine; mountains towering in the distance;"* —engage our attention until we reach Moldava. A little below this town recommences the mountainous scenery of the Danube, and at the very entrance of the rocky gorge through which the river finds its course are the ruins of Kolubatz, occupied about a century ago by a band of Wallachian brigands. On emerging from this part, the rapids of the Danube are before us. The bed of the river is here wholly composed of rough rocks, sometimes starting up in masses nearly to the surface of the water, sometimes forming a wall across it from bank to bank. Passing over unnoticed many interesting places, and much beautiful and sublime scenery, we hasten to the Iron Gate of the Danube, a spot that, taken altogether, is perhaps the most remarkable feature of the river. This is a series of rapids, extending through a narrow valley formed on the north by the Banat range, an offset of the Transylvanian Carpathians, and on the south by a lateral range of Mount Balkan. The name is probably derived from the extreme difficulty of the passage, and from the ferruginous colour of the rocks, which occupy the entire bed of the Danube for nearly three miles. The rocks are exceedingly rough in their appearance, tumbled about in every kind of form and position, and, when the waters are low, have a very terrific appearance: Mr. Quin likens them to the gaping jaws of some infernal monster. When the Danube is at its ordinary level, the roar of the waters as they hurry through the Iron Gate is heard for many miles round. Vessels of a low draught may descend the rapids, but to ascend them is a matter of great difficulty; here therefore occurs the only obstruction to a water communication between Hungary and Turkey. The mountains which form the sides of this most extraordinary valley have an interest of another, but scarcely less absorbing kind. Roman antiquities of an important character are found there and in the neighbourhood; roads, bridges, &c. with inscriptions still readible. The most important of these are a road and bridge, both attributed to the Roman emperor Trajan. The former was constructed as a tracking-path along the Servian side of the Iron Gate. At the lower part of the passage an ancient corridor is cut in the rock; at the upper, huge mortice holes are let in for the insertion of beams, on which the corridor was borne along its face. A large inscription still legible gives the honour of this great work to Trajan. A recent traveller whose MSS. are quoted by a writer in the 'Quarterly Review' (No. 108), says, 'Never did I more strongly feel the greatness of that wonderful people, than when, on sailing down the Danube, I first observed the traces and comprehended the object to which this work was destined. . . . . Here was the evidence of the accomplishment by the Romans, although scarcely an indication of it remains in Roman authors, of an enterprise which is now universally admitted to be one of the most important for the public welfare of Europe." Mr. Quin took some pains to trace the exact site of the famous bridge across the Danube, and, it appears, with success. He found on the Wallachian bank an ancient tower of Roman construction, built on an eminence; and looking down the river, he distinctly observed the water curling over a series of impediments extending from bank to bank. At both extremities of the line thus formed, he found the remains of square pillars, and a ruin on one side appeared to him to have been the buttress of the first arch of the bridge. Of the cuts at the head of these articles, the first represents a scene near the celebrated Strudel and Wirbel, the other two scenes lower down the river.

* Mr. Quin's 'Steam Voyage

At the Iron Gate the Danube quits the Austrian dominions and enters those of Turkey. The country on the south continues for some time mountainous, then hilly, and by degrees sinks into a plain; on the north is the great level of Wallachia. In its course towards the Black Sea, the Danube divides frequently, forming numerous islands, especially below Silistria. Its width where undivided now generally averages from 1500 to 2000 yards, and its depth above 20 feet. Before reaching its mouth, several large rivers flow into it, as the Alt, Sereth, and Pruth. On its junction with the last-mentioned river it divides into several branches, which do not again unite, and it at last terminates its long course by issuing through seven several mouths into the Black Sea.

THE EDIBLE BIRDS' NESTS OF THE EASTERN ISLANDS.

There is an article of extensive commerce in the islands of the Eastern archipelago, which, from its very unusual character, considered in reference to European habits, is worthy of a brief notice. We mean *birds' nests* as an article of food.

In Java and other Eastern islands a bird called the *Hirundo nidis edulibus*, a species of swallow, forms its nest of a substance which is eatable, and which is much prized by the higher classes in China. The nature of this substance has been the subject of much controversy among the Europeans who have had an opportunity of inspecting it, and among whom are Sir Stamford Raffles, Captain Forrest, Mr. Crawfurd, and M. Hogendorp. Captain Forrest states,—"The bird with an edible nest is called *Jaimalani* by the natives of the Moluccas, and *Layang-layang* by the Malays. It is black as jet, and very much like a martin, but considerably smaller. Its nests, which the Malays call *sarang*, are found in caves, and generally in those to which the sea has access; and as they are built in rows on perpendicular rocks, from which the young birds frequently fall, those caves are frequented by fish, and often by snakes, who are hunting for prey. The nests are made of a slimy gelatinous substance found on the shore, of the sea-weed called *agal-agal*, and of a soft greenish sizy matter often seen on rocks in the shade when the water oozes from above." Sir Stamford Raffles states however, that from observations which have been made at Java, it has been inferred that the mucilaginous substance of which the nests are formed is not obtained from the ocean. The birds, it is true, generally inhabit the caverns in the vicinity of the sea, as agreeing best with their habits, and affording them the most convenient retreats for building their nests; but several caverns are found inland at a distance of forty or fifty miles from the sea, containing nests similar to those on the shore. From many of their retreats along the southern coasts the birds have been observed to take their flight in an inland direction towards the pools, lakes, and extensive marshes covered with stagnant water, as affording them abundance of their food, which consists of flies, musquitoes, gnats, and small insects of every description. The sea that washes the foot of the cliffs where they most abound is almost always in a state of violent agitation, and affords none of those substances which have been supposed to constitute the food of the esculent swallow. From these and other circumstances, it has been supposed by Dr. Horsfield, that the nest is formed by an animal elaboration or secretion of the bird itself.

From the substance of the nests (which appears from the preceding remarks to be a matter still in dispute),

we pass on to notice their appearance and localities. In shape the nest is like that of an ordinary swallow; and in external appearance, as well as consistence, somewhat resembles a fibrous ill-concocted isinglass. When the nest is broken transversely, it displays several concentric layers, from which its mode of fabrication may be in some degree judged. The nests are collected by the natives twice a-year; and if regularly collected, and no unusual injury be offered to the caverns, the supply remains tolerably equable, very little increase of quantity being found to result from leaving the caves unmolested for a year or two. Most of the caverns are so situated as to render the task of collecting the nests very difficult, and requiring all the skill of persons trained to that purpose. Mr Crawfurd says, that the most remarkable and productive caves which he has met with are those of *Karang-Bolang*, in the province of Baglen, on the south coast of Java. Here the caves are only to be approached by a perpendicular descent of many hundred feet, by ladders of bamboo and rattan, over a sea rolling violently against the rocks. When the mouth of the cavern is attained, the perilous office of taking the nests must often be performed by torch-light, by penetrating into recesses of the rock, where the slightest trip would be fatal to the adventurers, who see nothing below them but the turbulent surf making its way into the chasms of the rock.

Hogendorp says, that in order to secure the fidelity of the natives employed in this perilous undertaking, they are stripped naked before descending into the caverns, as a means of preventing embezzlement. Before descending, they receive benediction from the hands of certain Mohammedan priests, who are stationed among the guards at the entrance of the cavern. These priests, the overseers, and the nest-gatherers, are all well paid by the government as a means of insuring their honesty.

Mr. Crawfurd has given a minute account of the commercial transactions connected with these nests, from which we learn that the value of the nests depends on various circumstances. The best nests are those obtained in deep damp caves, and such as are taken before the birds have laid their eggs; whereas the coarsest are those which are taken after the young have been fledged. The finest are the whitest, that is, those taken before the nest has been rendered impure by the young birds; the inferior qualities are dark-coloured, streaked with blood, or intermixed with feathers. Some of the natives, however, describe the purer nests as the dwelling of the male bird, and always so designate them in commerce. The only preparation which the birds' nests undergo is that of simply drying without direct exposure to the sun; after which they are packed in small boxes, usually of half a picul (a *picul* is equal to about 133 lbs. English). They are assorted for the Chinese market into three kinds, according to their qualities, distinguished as *first* or best, *second*, and *third* qualities. Caverns that are regularly managed generally yield rather more than half of the first quality, about a third of the second, and a small proportion of the inferior. The large revenue yielded by the sale of these nests (of which we shall speak presently) is claimed as the exclusive property of the sovereign, and everywhere forms a branch of revenue so important as to raise this singular traffic to a prominent station in the Eastern islands. This value however, as Mr. Crawfurd observes, is subject to much variation, according to the locality of the cavern. Being often in remote and sequestered situations, in a country of a lawless character, a property so valuable and exposed is subject to the perpetual depredation of freebooters; and it not unfrequently happens that an attack upon them is the principal object of the warfare committed by one petty state against another. In such situations, the expense of affording them protection is so heavy, that they are necessarily of little value. But in situations where the caverns are difficult of access to strangers, and where there reigns enough of order and tranquillity to secure them from depredation, and to admit of the nests being obtained without other expense than the simple labour of collecting them, the value of the property is very great.

The prices obtained for the birds'-nests at Canton are as follows: best, 3500 Spanish dollars the picul, or 5*l.* 18*s.* 1½*d.* per lb.; seconds, 2800 dollars the picul; and thirds, 1600 dollars. When they afterwards get into the Chinese markets, a still nicer classification is often made; the whole are frequently divided into three great classes, under the commercial appellations of *Paskat, Chikat*, and *Tung-tung;* each of which, according to quality, is subdivided into three inferior orders. The prices are thus made to vary from 1200 to 4200 Spanish dollars the picul, the latter of which rates is more than equal to their weight in solid silver! As to the quantity sent to China, it is not easily estimated. From Java it is supposed to amount to 200 piculs, or 27,000*l.* annually, of which the greater part is of the best quality. From the *Suluk* archipelago the annual quantity is estimated at 530 piculs; from Macassar, 30 piculs. Taking all the islands situated between Ceylon and New Guinea, in most of which these nests are found, Mr. Crawfurd supposes that the total quantity sent to China annually amounts to about a quarter of a million pounds weight, for which a sum nearly equal to 300,000*l.* is paid. Hogendorp says, that there are about fifty or sixty nests to a pound weight; so that the annual supply of nests must be from twelve to fifteen millions.

The most singular circumstance connected with this subject is, that the Chinese appear to be the only purchasers; they being the only people who have persuaded themselves to deem these nests a luxury. When the nests are steeped in water, they become softened, and are separable into fibres of a mucilaginous character; and in this form they are used as an ingredient in ragouts, soups, &c. They are consumed only by the great, and chiefly by the emperor and his court. The impression on the part of the Chinese seems to be that the use of the nests is powerfully stimulating and tonic; but as the Japanese, who so much resemble the Chinese in many of their habits, have no relish for the edible nests, and as it does not appear that any of the other islanders care much about them as an article of food, the use of these nests in China may perhaps be attributed to a taste for what is costly and difficult of attainment, rather than for any intrinsic quality in the nests themselves. But, be this as it may, one of the modes in which those of the best kind are said to be used is as follows:—The nests are first soaked in water to soften, are then pulled to pieces, and after being mixed with ginseng, are put into the body of a fowl. The whole is then stewed in a pot with a sufficient quantity of water, over a fire, where it remains all night, and in the morning the fowl is ready to be eaten. In other cases the softened nest is used as a kind of herb or seasoning in broths and soups.

In conclusion we may quote a remark from Mr. Crawfurd as to the nature of this traffic. "The price of birds' nests is, of course, a monopoly price, the quantity produced being by nature limited and incapable of being augmented. The value of the labour expended in bringing birds' nests to market is but a trifling portion of their price, which consists of the highest price which the luxurious Chinese will afford to pay for them, and which is a tax paid by that nation to the inhabitants of the Indian islands. There is perhaps no production upon which human industry is exerted, of which the cost of production bears so small a proportion to the market price."



[CORNEILLE, from a portrait by Desmaison. Vignette on the right—View of Dieppe. On the left—Havre. In the centre—Street of the Great Clock Rouen. At the bottom—Peasants of Corneille's native province, Normandie, from a sketch by Sorrieu.]

LOCAL MEMORIES OF GREAT MEN.

PIERRE CORNEILLE.

PIERRE Corneille, the son of an advocate of Rouen, was born at that place in 1606. He was destined to his father's profession, and, indeed, practised for some time, but with little success. A personal incident is said to have first indicated to him the nature of the talents he possessed, by furnishing him with the subject of his first comedy, 'Mélite.' He had been taken by one of his friends to see a lady of whom the latter was enamoured, when he himself fell in love with her. 'Mélite,' produced in 1625. was followed by several other pieces, which gave the poet some, but no very great reputation. Suddenly, however, he made an immense advance. One M. de Chalon, who had been secretary to Mary de' Medici, had retired to Rouen in his old age. Congratulating Corneille on his first success, he said to him one day, " Your comedies are full of spirit, but permit me to tell you the kind of writing you have embraced is unworthy of your talent: you will not acquire in it more than a passing renown. You will find among the Spaniards subjects which, treated in your taste, by a spirit like your own, will

produce great effect. Learn their language; it is easy; I offer to impart to you all that I know. We will translate first some passages from Guillen de Castro." It is perhaps to these words, says the author of Corneille's Life, in the 'Biographie Universelle,' "that we owe our tragic drama, the development of the genius of Corneille, and the taste of the nation." 'The Cid,' founded on De Castro's play of the same name, was the first fruit of the new study, and it at once raised Corneille's fame to the highest pitch. The Parisians looked upon this play, so superior to anything they had previously known on their stage, as little short of a miracle. He was from that time 'Le Grand Corneille.' And how did the great Richelieu, formerly his patron, receive this new accession to the literature which was to do such honour to his age? According to Fontenelle, he could not have been more unpleasantly surprised if he had seen the Spaniards at the gates of Paris! What was the cause of this feeling it is now difficult to discover. It has been said that the minister, jealous of all kinds of renown, had in vain offered to Corneille a hundred thousand crowns if he would sell 'The Cid' to him before representation, and not declare himself to be the author; and enormous as the sum mentioned was for the time, yet there have not been wanting evidences in support of its truth. But a more credible reason is to be found in the statement that Corneille, in the fulfilment of his duty as a court poet of putting Richelieu's comedies into verse, had altered some parts of a piece entitled 'The Comedy of the Tuileries,' and thus deeply wounded the minister's self-love. Whatever the cause, the consequence is undeniable, that Richelieu, from the period in question, opposed Corneille's advancement by every method in his power; and the rivals whom the latter had overshadowed, making common cause with the minister and the obsequious courtiers, set themselves earnestly to work to destroy the reputation of the production that had thrown them all into such commotion. In the 'Biog. Univ.' it is stated that its success excited against the author "one of the most violent persecutions of which the history of letters, and of the passions which dishonour them, have preserved the memory." Corneille, however, calmly pursued his course, and practically answered one of the invidious remarks that had been made in connection with 'The Cid,' namely, that he had borrowed his plot from the Spanish because he had not imagination enough to contrive a new one, by the production of his tragedy of 'Horace,' which completely established his power of moulding a complicated story out of scanty materials. Between the period of the production of 'The Cid,' in 1636, and the unsuccessful tragedy of 'Pertharite,' in 1653, many pieces appeared; and, amongst the rest, 'Polyeucte,' which is looked upon as Corneille's greatest work, and which, when the poet read it to a circle of friends prior to its representation, was looked upon as a failure. The fate of 'Pertharite' so disgusted Corneille, that he ceased writing for the stage, and, being of a devout melancholy temperament, turned his attention to religious poetry, and began to versify the 'De Imitatione Christi' of Thomas-à-Kempis. In 1659 he again returned to the theatre, with his tragedy of 'Œdipe,' which was successful, as was also an opera that he produced soon after. From that time he wrote nothing worthy of comparison with his earlier pieces. He died in 1684, at the age of seventy-eight.

This man, so great in the theatre, carried into the world the manners of a peasant, with the simplicity of a child. At the first glance there appeared a roughness about him which impressed the spectator with an unfavourable idea. This, says the 'Biog. Univ.,' is a feature he shared in common with other great men of his time, equally distinguished for their goodness. Corneille, like Turenne, beneath a rude and unpromising exterior, possessed great humanity and sweetness of disposition, as well as the more imposing qualities for which one would give him credit on a perusal of his works. He was a good son, a good husband, a good father. He may have had faults, but no vices. His tastes were as simple as his manners. He enjoyed the pleasures of domestic life, and found his happiness in his duty. He and his brother, also a dramatist and a poet, married two sisters; and without any arrangement as to their respective fortunes, &c., formed but one family and household till the poet's death. Connected with the descendants of Corneille is an incident of too honourable a character to a man of letters to be passed over without remark. Voltaire heard that a great-niece of Corneille's was living, with few friends and no fortune: he immediately took her into his house at Ferney, completed her education, and married her to a captain of dragoons. Besides the portion he gave with her, he undertook for her benefit to write a commentary on her distinguished ancestor. This work added 50,000 francs to the young lady's fortune.

Corneille was indisputably the founder of the tragic drama of France. A theatre, indeed, had been established as early as 1548, at the Hôtel de Bourgogne, at which were acted the plays of Garnier, Du Ryer, Jodelle, Hardy, Scudéri, and others. Corneille added his name to this fraternity of dramatic artists, and produced six comedies, which, though superior to theirs, were not so much superior as to set him decidedly above his contemporaries. The success of his first comedy, 'Mélite,' was such as to introduce him at once into the dramatic community, and to procure for him the patronage of Cardinal Richelieu. It was followed by 'Clitandre,' 'La Veuve,' 'La Galérie du Palais,' 'La Suivante,' and 'La Place Royale.' He produced also a tragedy, 'Medée,' worthy, in bombastic extravagance, to rival those of Scudéri. But having, as we have mentioned, been induced to study the Spanish drama, he constructed out of it a species of drama peculiarly his own; he founded a school, of which he became and still continues to be the greatest master. His tragedy of 'The Cid' took the French stage by storm, and lifted him to an elevation which made him independent of the great cardinal, who from a patron became an enemy, and tried, by the aid of Scudéri and the French Academy, to criticise him down; but in vain; the French public were on his side; and his following tragedies of 'Horace,' 'Cinna,' and 'Polyeucte' established him in his pre-eminence. As he thus lifted himself, like Shakspere, above his contemporaries, such of our readers as are not acquainted with the French tragic drama will probably suppose that it resembles the tragic drama of Shakspere. Not at all. The tragedies of Corneille are as different from those of Shakspere as it is possible for the consummate art of the two great masters to have made them. In Shakspere we have a series of events such as have occurred or may occur in the world, springing out of the actions of men of every variety of character, who are moved by passions and motives such as we can understand and appreciate, and who express themselves in a language natural, familiar, and, as Dr. Johnson happily expresses it, "level with life." Not so in Corneille. The men are heroes; the women are heroines. There is no development or discrimination of character. They belong to a world of which we have had no experience; and they express themselves in a language appropriate to the elevation of their characters—the language of poetry, not of life. Most of our readers are aware that the French have no blank verse; the tragedies of the school of Corneille are in rhymed couplets, to which the rhymed tragedies of Dryden afford the closest resemblance of anything which we possess in English; with this difference, that the Frenchman is

vastly superior to his imitator in earnestness of purpose and intensity of effect. In the tragedies of Corneille an event is selected as the groundwork of the action which puts some strong passion (in Corneille, it is almost always that of love) in direct opposition to some equally strong principle;—honour, as in 'The Cid;' or patriotism, as in 'Horace;' or mingled patriotism and ambition, as in 'Cinna;' or religion, as in 'Polyeucte.' These violent contrasts, or rather contests, of feeling, afford situations of deep interest, well calculated for dramatic effect. In the tragedies of Corneille there is a general elevation of sentiment, frequently rising towards sublimity, sometimes perhaps reaching it. The style is nervous and clear, and the versification has a majestic march suitable to the lofty sentiment which it has to convey. His finest plays are—'Le Cid' (1637), 'Horace' (1639), 'Cinna' (1639), 'Polyeucte,' and 'Rodogune' (1646). 'Le Menteur,' a comedy, partly translated and partly imitated from the Spanish, performed in 1641, was very successful; it is the best of his comedies. He produced several tragedies and some comedies besides those which we have named, in which are to be found fine scenes and splendid passages; but it is generally admitted, that, regarding each play as a whole, none are equal to those which we have named, and most of them manifest a great falling off of dramatic power.

It has been generally supposed that Corneille was the first to introduce and defend what are called the unities. This, however, is a mistake. In 'The Cid,' for instance, no regard whatever is paid to the unities either of time or place. The scene is shifted from the residence of Don Gomès to the king's palace; to the street; then to the house of Chimene, and then again to the palace, just as the poet finds convenient; and the characters are introduced when and where he has occasion for them; sometimes, indeed, from no other apparent reason. In 'Horace' he adheres strictly to the unity of time and place; in 'Cinna,' again, he departs from it.

MOLE-CATCHERS AND MOLE-CATCHING.

Mole-catchers are not very dissimilar in their pursuits from rat-catchers: nor does either class rank very high even among the labouring communities of rural districts; for both the mole-catcher and the rat-catcher are looked upon as persons who have a distaste for ordinary farm labour—preferring a half-lazy and somewhat dubious employment to gaining a subsistence by "the sweat of the brow." The mole-catcher, however, when he has a job, frequently walks more than twenty miles a day, exclusive of the labour and delay in the setting of his traps; and this, for the most part, neither along good roads nor well-beaten paths, but over hedge and ditch, from farm to farm, and from field to field, upon the estates and farms whose owners or occupiers contract with the mole-catcher to have their moles destroyed.

Except in those parts of the country where extensive wastes are found, or where the principal portion of the land is devoted to grazing, the mole-catcher's occupation is periodical, being confined to those seasons when he does not materially interfere with the crops; so that, for several months of the year his traps are idle, and he himself has to look for some other employment. In winter, too, the frost often prevents him pursuing his calling or interferes with his success. Besides, in wet situations, a hard frost will sometimes burst his traps, when made out of hollow wooden tubes.

There is scarcely any part of the country entirely uninfested by those animals; for although they do not prey upon any of the ordinary products of the farm, they do much damage by their workings, injuring the roots of plants and vegetables; and where there are drains, or embankments against rivers or ponds, the former are constantly in danger of being stopped up by them, while the latter are liable to be damaged by the excavations they make through them in order to reach the water.

It is rather singular that so easy and simple a matter as trapping moles should not invariably be undertaken by individuals living in the immediate neighbourhood where there services are required. Nevertheless such is not the case; for over a considerable extent of Scotland, as well as of Wales, the moles are destroyed by catchers who belong to some of the northern counties of England—particularly Westmoreland, with parts of the adjoining counties of Lancashire, Yorkshire, and Cumberland—who annually visit those countries at regular periods of the year, when their appearance is looked forward to among the Scotch and Welsh farmers with as much certainty as the arrival of the Irish hay-makers and reapers is anticipated by English farmers. But the stay of the mole-catchers is much longer than that of the hay-makers or reapers, for instead of an absence of a few weeks, they seldom return under six or seven months; and, as it would be inconvenient to carry their stock of traps with them annually, when once they have got a connection established among the farmers, their traps remain until they return the following season.

Mole-catching is by no means a mysterious art, or one that requires much capital to commence business.

When the mole-catcher makes use of the old-fashioned wooden trap, a stock of seventy or eighty may cost him twelve or fifteen shillings, and by the time they are fitted up with the necessary stout linen twine, or whipcord, and triggers fitted to them, an expense of two or three shillings more will be added. Besides his traps, he should possess a small and light narrow spade, or spud, for the purpose of making holes wherein to place his traps; so that it would require nearly the amount of a pound sterling to set him up in his calling. The common size of one of these wooden traps is five, or five and a half inches in length, and about two inches in diameter, being usually hollowed out with a two-inch auger; the thickness of the wood which composes the shell of the trap is from a quarter to half an inch in thickness. After the tube has been bored out, put into a turning-lathe, and the shell smoothed and reduced to the requisite thickness, a considerable segment is cut out of one side of the hollow tube, the length of which is about three inches; and in the centre the part taken away commonly extends to about the centre of the shell of the trap. Indeed the less substance left remaining the better for the purpose of deceiving the moles; but when but little of the original shell or tube is left, the traps are rendered so slight that they are liable to be injured or broken to a much greater extent than they otherwise would be when left stronger. At the distance of half an inch from either end of the trap a small groove is made *within* the tube, for the purpose of placing therein the string or thin cord, which is kept in its place by a little soft earth being plastered over it when so placed in the groove. This string is admitted through two gimlet-holes an inch apart; and immediately in the centre of the trap—also on the upper side—is a larger gimlet-hole for the purpose of fixing therein the point of the trigger at the time the trap is set in the ground. The noose placed in either groove near the ends of the trap is formed of one piece of cord, or two connected together in the centre, and there another short piece of cord, not over two or three inches long, with a knot at its extremity, is put down through the centre or trigger-hole, when the narrow end of a triangular piece of wood, called the trigger, is pushed upwards into this same centre-hole, and the knot at the

end of the short downward cord prevents its being pulled through the hole upwards, until such time as the trigger is removed. Two small hooked sticks are pushed firmly into the ground, one at each end of the trap, the hooks preventing the trap from being lifted out of its place when the spring-stick, which acts as a lever, is properly adjusted. The spring-stick is commonly about three feet long; the stouter end is pushed into the ground, at a distance from where the trap has been placed, in one of the principal burrows or passages of the mole, the smaller end being bent over so that its extremity may be brought down and inserted in the loop, to which is immediately attached the downward trigger-string, a notch being cut near the end of the spring or lever, to prevent the loop from slipping off. This completes the operation of setting a mole-trap: the mole, in passing along its burrow, when it reaches the trap does not find its course wholly obstructed, for the trigger but partially fills up the passage; and it at once proceeds to remove the impediment out of the way; but the moment the trigger is pushed to one side, the lever strikes up the two nooses, one or other of which is sure to secure the victim, pressing it with considerable violence (according to the strength of the spring-stick) against the upper side of the trap, where it soon dies from the effects of the violent pressure.

There are instances, however, where a mole will exhibit a considerable degree of cunning and sagacity; and on arriving at a trap, instead of passing directly through it, will at once discover that there is a necessity for caution; and instead of venturing into either end of the trap, will proceed to open a passage outside of it, and in doing so fills both ends of the trap with earth without ever moving the trigger. When he discovers this to be the case, the mole-catcher will distribute two or three traps in the same *run* (as a burrow is often called), when the mole, having cautiously avoided one or two of them, falls into the second or the third.

Sometimes the traps are made of a small piece of flat board, say five inches long and three wide, near to each end of which is fixed a small hoop of tough ash, or sometimes of iron, within which a couple of nooses are placed, sometimes horsehair ones, but more generally such as have already been described, and gimlet-holes have to be made in the flat piece of board similar to those in the circular trap, and a trigger and lever are employed in the same way. Moles are occasionally taken also by sinking earthen jars level with the bottom of the mole tracks; and sometimes they are poisoned by steeping hazel-nuts, or other substances that they are known to be fond of, in powerful liquid poisons. A mole-catcher, or indeed any person who is acquainted with their haunts and habits, may frequently destroy them during the mornings and evenings at the hours they commonly throw up the mole-hills; for by sticking a spade across the burrow, behind where the mole may be seen or heard busy at work, it will have no means of retreating (unless it happen to be in an old working from which there are sundry passages), and may thus be easily destroyed. Some dogs become very expert at destroying moles, and will watch for hours until an opportunity presents itself of pouncing upon their victims while engaged in throwing out the mould from some new excavation, when the eye, assisted by the ear, of the cunning cur, enables it to secure its prey.

Though the skins of moles are of some little value to the mole-catcher, the fur, from the shortness of the staple, though exceedingly soft and of a fine texture, is comparatively worthless in the manufactures of this country.

SONGS OF CHARLES DIBDIN.

The art of song-writing, the most simple, and apparently the most easy of all the species of poetry, is perhaps that in which excellence is least frequently obtained in proportion to the number of attempts. One cause of this lies probably in its facility of mechanical construction, which leads multitudes, most of whom are wholly unqualified, into this path. Another course lies probably in mistaken ideas as to what is required to form a deservedly successful and enduring song. On the latter point many theories have been proposed, which it is not our purpose here to discuss, but all agree in this, that however taste can be modified by fashion, nothing will survive that fashion unless formed on the surer foundation of feeling and nature.

English songs have scarcely yet had sufficient justice done them. From an age previous to Shakspere we had truly national *songs*, as distinguished from *ballads*, of which we have also many. One on the battle of Agincourt is given by Percy ('Reliques of Ancient English Poetry,' vol. i., book i., No. 5), who, we think, underrates it, talks of its "homely rhymes," and congratulates us that our ancestors could wield their swords much better than their pens. We shall give a stanza, that the reader may judge, even under the disadvantage of a modern pronunciation which must materially affect the rhythm, whether the strokes of our ancestors' pens were not as direct and as hearty as those of their swords:—

"He set a siege, sothe for to say,
To Harfleur town with royal array;
That town he won, and made a fray,
That France shall rue till doméday.
Deo gratias:
Deo gratias Anglia redde pro victoria."

These *national* songs have never wholly ceased, though but occasionally appearing, and their rough vigour has ever risen above the more elegant exotics that have been imported into our literary bowers. Love and war have been, of course, the staple subjects. Shakspere, Jonson, Marvell, and many nameless contributors have left us masterly specimens; while the sweetness and elegance of Waller, Cowley, and others are known only to literary men, and as objects of curiosity; and the wit and poetical imagery of some more modern lyrical poets will scarcely, we consider, ever raise them to the dignity of giving expression to, or perpetuating, what may be termed national feelings.

To be permanently popular a song must not rise too high beyond the comprehension of its hearers; but neither should it descend to pander to their vulgarities or bad tastes. Its aim should be to elevate, by separating as far as possible the actual feelings, habits, or manners, from the accidental degradations with which they may be associated. By vulgarity we by no means understand those solecisms of language which characterise the class represented or addressed, and which come to them as the language of good fellowship and friendship, but the grossnesses of idea or act likely to be produced by an imperfect education acted upon by strong if not violent passions. These Dibdin sought to restrain or guide, and viewed in this light his songs must be allowed to hold a very high rank. Never concealing, and sometimes half-justifying or extenuating the irregularities of the classes whom he chiefly addressed, the whole tendency of his songs is to strengthen in the homeliest and least obtrusive manner the peculiar virtues of their station—honour, valour, mercy, friendship, and virtuous love; while incidentally, and without the remotest attempt at teaching, the ill consequences of an opposite conduct are shown, even under the guise of a triumphing boast that—

"He pays his score
With spirit on shore,
And that's all the use of a guinea."

The classes above alluded to as those whom Dibdin chiefly addressed are the soldiers and sailors. "A great portion of the patriotic songs of England have reference to her character as a maritime nation. These allusions not only preserve amongst the people generally a habit of referring to the great cause of our national triumphs, but they keep alive amongst the seamen those proud and heroic feelings which sustain their superiority in the day of battle. A sailor's life is one of intermitting hardship and leisure; and it is natural that in the pauses of his duty he should relieve the monotony of his situation by those songs which recal the idea of his home or of his love, or give him confidence in his painful though glorious career of exertion."* Dibdin, in addressing those classes, has had many eminent predecessors, and some contemporaries and followers, but in productiveness he has outnumbered the whole, and in varied powers and success he has equalled the best. As a specimen of his homilies for seamen, we give his 'Tom Tackle:'—



[Sailors Singing.—After a Drawing by William Lee.]

'Tom Tackle was noble, was true to his word;
If merit bought titles, Tom might be my lord.
How gaily his bark through life's ocean would sail;
Truth furnish'd the rigging, and Honour the gale.
Yet Tom had a failing, if ever man had,
That, good as he was, made him all that was bad;
He was paltry and pitiful, scurvy and mean,
And the sniv'lingest scoundrel that ever was seen:
For so said the girls and the landlords 'long shore.
Would you know what his fault was?—Tom Tackle was poor.

'Twas once on a time, when we took a galloon,
And the crew touch'd the agent for cash to some tune,
Tom a trip took to gaol, an old messmate to free;
And four thankful prattlers soon sat on his knee.
Then Tom was an angel, downright from heaven sent!
While they'd hands he his goodness should never repent.
Return'd from next voyage, he bemoan'd his sad case,
To find his dear friend shut the door in his face!

'Why d'ye wonder?' cried one: 'you're served right, to be sure:'
Once Tom Tackle was rich—now Tom Tackle is poor!

I ben't, you see, versed in high maxims and sitch;
But don't this same honour concern poor and rich?
If it don't come from good hearts, I can't see where from,
And, dam'me, if e'er tar had a good heart 'twas Tom.
Yet, some how or 'nother, Tom never did right:
None knew better the time when to spare or to fight;
He, by finding a leak, once preserved crew and ship;
Saved the commodore's life;—then he'd make such rare flip!
And yet for all this, no one Tom could endure;
I fancies as how 'twas—because he was poor.

At last an old shipmate, that Tom might hail land,
Who saw that his heart sail'd too fast for his hand,
In the riding of comfort a mooring to find,
Reef'd the sails of Tom's fortune, that shook in the wind.

* 'Englishman's Library,' p. 239.

He gave him enough through life's ocean to steer,
Be the breeze what it might, steady, thus, or no near:
His pittance is daily; and yet Tom imparts
What he can to his friends; and may all honest hearts,
Like Tom Tackle, have what keeps the wolf from the door,
Just enough to be generous—too much to be poor."

From Chevy Chase downward, a marked characteristic of the patriotic songs of Britain has been the openness and candour with which the bravery of an enemy is reckoned upon and acknowledged. Though the sailor is made to boast,

"When yard-arm and yard-arm 'longside of a foe,
When blood from the scuppers rain'd on us below,
When crippled enough to be taken in tow,
To strike we saw Mounseer prepare;"

there is no disparagement of his adversaries. Self-confidence is made the foundation of his courage. Neither is there any attempt to deceive himself or others as to the dangers of his profession, but he is taught to pride himself in the energy of will that determines him to overcome them by his own efforts, or renders him willing to perish in the attempt. To minds of this cast, and educated in such a school, Dibdin addresses his shipwreck:—

"Avert yon omen, gracious Heaven!
The ugly scud,
By rising winds resistless driven,
Kisses the flood.
How hard the lot for sailors cast,
That they should roam
For years, to perish thus at last
In sight of home;
For if the coming gale we mourn
A tempest grows,
Our vessel's shatter'd so and torn,
That down she goes.

The tempest comes, while meteors red
Portentous fly;
And now we touch old ocean's bed,
Now reach the sky:
On sable wings, in gloomy flight,
Fiends seem to wait,
To snatch us in this dreadful night,
Dark as our fate;
Unless some kind, some pitying power
Should interpose,
She labours so, within this hour
Down she goes.

But see, on rosy pinions borne,
O'er the mad deep,
Reluctant beams the sorrowing morn,
With us to weep.
Deceitful sorrow, cheerless light,
Dreadful to think,
The morn is risen in endless night,
Our hopes to sink.
She splits! she parts!—through sluices driven,
The water flows;
Adieu, ye friends—have mercy, Heaven!
For down she goes."

The foregoing song would not appear at first sight a very fitting one to supply the place of a recruiting officer, as Dibdin's songs are said to have done with surprising effect; but he knew whom he was addressing, and we will allow him to give his own character of 'The true English Sailor:'—

"Jack dances and sings, and is always content;
In his vows to his lass he'll ne'er fail her:
His anchor 's a-trip when his money 's all spent;
And this is the life of a sailor.

Alert in his duty he readily flies,
Where the winds the tired vessel are flinging;
Though sunk to the sea-gods, or toss'd to the skies,
Still Jack is found working and singing.

'Longside of an enemy, boldly and brave,
He'll with broadside on broadside regale her;
Yet he'll sigh to the soul o'er that enemy's grave;
So noble's the mind of a sailor.

Let cannons roar loud, burst their sides let the bombs,
Let the winds a dread hurricane rattle,
The rough and the pleasant he takes as it comes,
And laughs at the storm and the battle.

In a fostering power while Jack puts his trust,
As fortune comes, smiling he'll hail her,
Resign'd, still and manly, since what must be must;
And this is the mind of a sailor.

Though careless and headlong, if danger should press,
And rank'd 'mongst the free list of rovers;
Yet he'll melt into tears at a tale of distress,
And prove the most constant of lovers.

To rancour unknown, to no passion a slave,
Nor unmanly, nor mean, nor a railer,
He's gentle as mercy, as fortitude brave;
And this is a true English sailor.

"Had Dibdin written merely to amuse," says a writer in the 'Harmonicon,' in 1824, "his reputation would have been great, but it stands the higher because it is always on the side of virtue. Humanity, constancy, love of country, and courage, are the subjects of his song and the themes of his praise, and while it is known that many a national foe, whether contending or subdued, has experienced the efficacy of his precepts, we are willing to believe that the sufferings which the lower orders of the creation are too commonly doomed to endure, have now and then been a little mitigated through the influence of his persuasive verse." The latter part of the above judgment, with which we thoroughly agree, alludes to the well-known song of 'The High-mettled Racer,' which he has bequeathed to the world, together with many others of a more pacific character than the great majority of his pieces. War is no doubt a hateful evil, and if it cannot be extirpated from earth, will assuredly be ameliorated by the extension of knowledge; but though Dibdin was a man of his age, and as such his "voice was still for war," yet it was a great merit that, at a period of unusual excitement, he cheered its followers on as brave but humane men; as performing a duty to their country, not as gratifying any vindictive passion of their own.

A collected edition of his songs, with some capital illustrations by G. Cruikshank,* has given occasion to this article, and we add a hasty sketch of his life to make the notice of so eminent a man as complete as our limits will permit.

Charles Dibdin was born in 1745, at Dibdin, near Southampton, the youngest of eighteen children, and received his musical education at Winchester, under Kent; and at sixteen produced an opera at Covent Garden, and a few years afterwards made his appearance as an actor; but it was not till 1789, by the production of the celebrated ballad of 'Poor Jack' and other songs, in an entertainment called 'The Whim of the Moment,' and of which he was sole author, composer, and performer, that his true destination was fully and immediately recognised as a lyric poet of a high order. His inclination for, and probably much of his knowledge of, naval matters, has been attributed to the influence of an elder brother, the captain of an East Indiaman, and upon whose death he wrote the well-known and pathetic song of 'Tom Bowling.' After a career involving most of the casualties attending the life of a dramatic manager, he retired into private

* Murray, 1841.

life in 1805, but without a sufficient independence to make his retreat comfortable. This having been represented, the government, which, according to his own statement, had urged him to produce, and even to give away, what were called war-songs, and to which he had acceded at a considerable pecuniary sacrifice, granted him a pension of 200*l*. per annum. On the change of the ministry, which was succeeded by that of Lord Grenville, it was withdrawn from him, but on another change it was most properly again restored (a part only, by his own statement); but he did not enjoy it long, as he died of paralysis in 1813, and was interred in the burial-ground of St. James's, Hampstead Road.

CHAUCER'S PORTRAIT GALLERY.

THE PARDONER.

With the Sumpnour, continues the poet,

"Rode a gentle Pardonere
Of Rounceval, his friend and his compeer,
That straight was comen from the court of Romé,
Full loud he sang, 'Come hither, lové, to me:'
This Sumpnour bare to him a stiff burdoun,*
Was never tromp of half so great a soun.
This Pardoner had hair as yellow as wax,
But smooth it hung as doth a strike of flax,
By ounces hung his lockes that he had,
And therewith he his shoulders overspread,
Full thin it lay by culpons,† on and on;
But hood for jollity, ne weared he none;
For it was trusséd up in his wallét.
Him thought he rode all of the newe get;‡
Dishevel, save his cap, he rode all bare.
Such glaring eyen had he as an hare.
A vernicle had he sewed upon his cap.
His wallet lay before him in his lap,
Bret-full of pardon come from Rome all hot.
A voice he had as small as hath a goat.
No beard had he, ne never none should have,
As smooth it was as it were newe shave.
* * * *
But of his craft, from Berwick unto Ware,
Ne was there such another Pardonere.
For in his mail he had a pilwebere,§
Which, as he saide, was Our Ladie's veil.
He said he had a gobbet || of the sail
Thatte Saint Peter had when that he went
Upon the sea till Jesus Christ him hent.¶
He had a cross of laton full of stones,
And in a glass he hadde pigges' bones.
But with these relics, whenne that he found
A poure parson dwelling up on lond,
Upon a day he got him more money,
Then that the parson got in moneths tway.
And thus with feigned flattering and gapes
He made the parson and the people his apes.
But truely to tellen at the last,
He was in church a noble ecclesiast.
Well could he read a lesson or a story,
But alderbest** he sang an offertory,††
For well he wiste when that song was sung,
He muste preach, and well afile his tongue,
To winne silver as he right well could,
Therefore he sang the merrier and loud."

Such is the general description of the Pardoner, in the prologue to the 'Canterbury Tales;' but in the tales themselves we have a still more detailed picture, painted by that most amusing and impudent cheat himself, and in the richest style of humorous satire.

* Or, sung a base accompaniment. † Shreds.
‡ That is to say, in the most fashionable manner.
§ The covering of a pillow. || Morsel.
¶ Took hold of. ** Best of all.
†† The anthem or service chanted during the offering, and forms a part of the Mass.

Before we proceed any further, however, it may be as well to notice a few particulars concerning the origin and history of the "craft" of which the individual in question is so brilliant an exemplar. In the early ages of the Roman Catholic church, contrite sinners, after confession, not unfrequently received severe and public punishment, in addition to the pains of purgatory after death to which their sin would subject them. Occasionally, however, an *indulgence* was granted by the bishops, mitigating the severity or duration of both kinds of punishment, or commuting them for works of charity and pious exercises. In progress of time, such indulgences were granted on a more wholesale scale, as a temptation to wealthy persons to assist in the erection of some great monastery or cathedral, or for the attainment of other important objects desired by the church. Such was the origin of indulgences. The first great abuse of this power appears to have been its too frequent use by the bishops, and by its arrogation on the part of simple priests; the result of which was a most injurious facility of obtaining remission of punishment. The early fathers of the church, St. Cyprian and Tertullian for instance, complain of this state of things. A worse, however, was to follow. Indulgences not only were granted without reference to their original purpose, of merely commuting a specific punishment for a specific sin, and in an appropriate manner after a consideration of all the circumstances—but they became matters of sale! And although the traffic in them has been severely reprobated by many councils, and although the very bull by which they were granted contained a clause stating that if anything were given as the price of the indulgence, the indulgence itself became null, yet it is well known that, in the words of Godwin, "the sale of indulgences, pardons, and dispensations, the occasions for which were continually multiplied, brought a boundless revenue to the court of Rome.* By the time of Chaucer and Wickliffe, the evil had become an intolerable disgrace to the church in the eyes of all its enlightened and pious friends; consequently we find both those admirable reformers holding the Pardoners, as the retailers of indulgences were called, up to the scorn and contempt of their readers. The poet, in particular, has drawn their character so carefully, has detailed all the modes of imposition adopted by them, with so keen a sarcasm, that there wanted but the art of printing for its dissemination to have saved our later writers and preachers a great deal of trouble. The Pardoner thus addresses the other pilgrims:—

"Lordings, quod he, in chirche when I preach,
I peine me† to have an hautein‡ speech,
And sing it out as round as goth a bell,
For I can all by roté that I tell.
My theme is alway one, and ever was:
Radix malorum est cupiditas.§
First I pronouncé whennes|| that I come,
And then my bulles show I all and some;
Our liegé lordés seal on my patént,
That show I first, my body to warrént,
That no man be so bold, ne priest, ne clerk,
Me to disturb of Christes holy work.
* * * * *
Then have I in latoun a shoulder bone,
Which that was of a holy Jewes sheep.
Good men, say I, take of my wordes keep;
If that this bone be wash'd in any well,
If cow, or calf, or sheep, or oxé smell,
That any worm hath eat, or worm ystung,
Take water of that well and wash his tongue,
And it is whole anon.

* 'Life of Chaucer,' vol. ii., p. 114.
† I peine me, *i.e.* I take pains. ‡ Haughty, bold
§ Cupidity, or avarice, is the root of all evil.
|| Whence.

If that the good man that the beastes oweth*,
Will every week, e'er that the cock him croweth,
Fasting, ydrinken of this well a draught,
As thilke holy Jew our elders taught,
His beastes and his store shall multiply;
And, sirs, also it healeth jealousy.
There is a mitten eke, that ye may see:
He that his hand will put in this mitten,
He shall have multiplying of his grain
When he hath sowen, be it wheat or oats,
So that he offer pence or elles groats."

The veneration for the relics of holy men, martyrs, &c. sprung up during the first age of the Christian church; but their use, which, it appears from Chaucer, had grown in the fourteenth century into so vulgar a superstition, and afforded such a harvest to imposture, may be dated probably from about the end of the sixth century only. At that period Gregory I. was pope, who displayed a high sense of the virtue inherent in such things. There is a letter of his to the empress Constantina, in answer to her request for a part of the body of St. Paul, which he declines, on the ground that it was not the custom of the Romans, and in general of the Christians of the West, to touch, much less to remove, the bodies of saints; but that they put a piece of linen, called Brandeum, near them, which is afterwards withdrawn, and treasured up with due veneration in some new church, and as many miracles are wrought by it as if the bodies themselves were there. In order, however, not to wholly disappoint the empress, the Pope added, he would send her some filings of the chains which St. Paul wore on his neck and hands. From that time the veneration for relics increased, till it became, as we have said, during the middle ages, a vulgar superstition, on which impostors throve:—

"By this gaud have I wonnen year by year
A hundred marks since I was Pardoner,"—

continues the candid rogue of the 'Canterbury Tales.' We learn from the same authority—the Pardoner's account of himself—his mode of silencing all opposition to his trade, or at least of punishing it, by attacking the offender from the pulpit, which it appears was frequently if not generally open to him. "For," he says,—

"When I dare no other ways debate,
Then will I sting him with my tongue smart
In preaching, so that he shall not asterte†
To be defamed falsely, if that he
Hath trespassed to my bretheren or to me.
For though I telle not his proper name,
Men shall well knowen that it is the same,
By signs, and by other circumstances:
Thus quit I folk who do us displeasances.
Thus spit I out my venom under hue
Of holiness, to seem holy and true.
But shortly mine intent I will devise,
I preach of nothing but for covetise.
Therefore my theme is yet, and ever was,
Radix malorum est cupiditas."

Mr. Todd says, "However lightly the character of the Pardoner may be estimated, I must not omit to remark, that the tale which the poet occasions him to recite (the awful story of 'Death and the Three Riotours') is extremely interesting in its dramatic and moral effect."‡ This observation, whether so intended or not, appears calculated to convey an erroneous impression, namely, that there is a want of fitness between the tale and its relater, which is perhaps about the last fault that so great an artist as Chaucer would have committed. Knowing the Pardoner's character and tastes, the pilgrims cry out, immediately that he is about to commence his tale,

"Nay, let him tell us of no ribaldry.
Tell us some moral thing that we may learn."

To which the Pardoner replies—

"—though myself be a full vicious man,
A moral tale yet I you tellen can,
Which I am wont to preachen for to win;"

and which he "can by rote," as he has before indirectly stated. The tale is told: and at its conclusion, the Pardoner, with consummate assurance and irresistible humour, says to the pilgrims,—

"But, sirs, one word forgot I in my tale—
I have relics and pardon in my mail,
As fair as any man in Engle-land,
Which were me given by the popé's hand.
If any of you will of devotion
Offer, and have mine absolution,
Come forth anon, and kneeleth here adown,
And meekly receiveth my pardoún.
Or elles taketh pardon, as ye wend
All new and fresh, at every townes' end,
So that ye offer alway new and new,
Nobles or pence, which that be good or true.
It is an honour to everich that is here,
That ye moun have a suffisant Pardonere
To assoilen you in country as ye ride
For adventurés which that moun betide."

And to make the whole thing richer and more ridiculous, he adds,—

"I redé that our *hoste* shall begin,
For he is most enveloped in sin.
Come forth, sir host, and offer first anon,
And thou shalt kiss the relics every one,
Yea, for a groat; unbuckle then thy purse."

There is a laugh at the host's expense; quickly, however, returned upon the Pardoner by Harry Bailly's retort. The worthy knight interferes, and checks the rising anger; so the two "kiss,"

"——— and riden forth their way."

The Sutherland manuscript shows the long yellov hair spread in parted locks upon the Pardoner' shoulders; his surcoat of scarlet trimmed with white and his scarlet cap with the *vernicle* in front. This i an ornament exhibiting a copy in miniature of the pic ture of Christ, supposed to have been miraculousl imprinted upon a handkerchief preserved in the churc of St. Peter's at Rome: it is worn by the Pardoner a a token of his recent return from the holy city. Hi stockings are blue. In his hand he carries the cros of laton, a kind of copper or mixed metal, coloured a the points, yellow, red, and blue. The wallet bearin such precious relics rests on the horse's back, and is car fully guarded by white strings, which the Pardone has hung round his neck. We conclude by observing that to the Pardoner or his class we are in no triflin degree indebted for the acceleration, at least, of tl Reformation. It was the retailing of indulgences l Tetzel, a Dominican friar, in Wittemberg, in 151 that brought Luther first before the world, in oppos tion not only to their sale, but to their general purpo and tendency, and so prepared his mind for th mightier warfare he was to wage in sweeping awa throughout Europe the abuses of which Pardone formed but an inconsiderable portion; and in whic his success was to be for ever afterwards referred to a one of the greatest epochs in the history of intellectu independence.

Safe Dependence.—A firm trust in the assistance of an A mighty Being naturally produces patience, hope, cheerfulne and all other dispositions of the mind that alleviate those cal mities which we are not able to remove.—*Spectator.*

* Oweth. † Escape.
‡ Illustrations of Gower and Chaucer, p. 263.

GRATUITOUS EXHIBITIONS.

THE CARTOONS AT HAMPTON COURT.



[The Miraculous Draught of Fishes.]

In the first and second volumes of the 'Penny Magazine' the history of the Cartoons of Raffaelle was given and all those which are now at Hampton Court were described with reference to their character and merits as pictures. To the illustrious artist himself, the reader has also been introduced (vol. i., p. 13), and Hampton Court, the not unbecoming dwelling-place of the Cartoons, has been fully described (vol. iii., p. 25). To these points it is not, therefore, necessary to refer on the present occasion; but it is our intention to view the Cartoons in connection with the historical circumstances which they embody—to which they give form, and with so surpassing a power of realization, that these pictures become for ever a part of the intellect of every one by whom they are contemplated. Every one reads, or hears read, often the historical statement of the events which the painter has depicted; and every one, as he reads, necessarily forms, each to himself, an ideal image of the scene. This idea is dim, shadowy, indistinct, differing at different times and occasions; the forms and colours dependent upon weather, health, youth, age, and a multitude of circumstances in ourselves and out of ourselves. But he who sees the Cartoons of Raffaelle finds all his future imaginations with respect to these scenes paralysed, or rather superseded. He reads, but his mind cannot act, as before, upon its own resources. A master-spell is upon his spirit; and instead of the fantastic and dim uncertainties of the passing picture which his own conceptions would adumbrate, the Cartoon of Raffaelle rises spontaneously before him in all its truth and distinctness, and it is impossible to form another image of the scene than that which *it* has represented. And whenever the mind recurs to these events, and, unconsciously revolving against its bondage, commences forming a picture for itself, it is found that it would merely produce slight differences of grouping and of arrangements in parts. The materials are still Raffaelle's; the Christ is Raffaelle's; the Peter, Raffaelle's; the John, Raffaelle's; the Paul, Raffaelle's; and finding it thus, the mind abandons its incipient attempt at independent action, and submits willingly to a captivity better than freedom.

Now this is the undoubted privilege of genius—to make its acts parts of other minds—to render far more than "bone of our bone and flesh of our flesh"—by becoming incorporate with that essential atmosphere through which our inner and intellectual life receives its light, and in which it breathes and has its being. And this privilege is not common or of small value. A great conqueror is he—some will say the greatest of conquerors—who has conquered minds in any parts of their acts or operations; and who asserts this power over the minds of people of different nations, languages, habits, conditions, ages; and who, in this most unlike the conquerors of armies and of kingdoms, maintains and exercises his authority long after—ages after—his own personal existence has been lost in the "cold obstructions" of the grave. Foremost among these conquerors of the world is Raffaelle, some of

the chief agents of whose continued sway we now proceed to contemplate.

It is well known that the Cartoons at Hampton Court form part of a series of subjects from the New Testament history, designed as patterns for two sets of magnificent tapestry, one of which Pope Leo X. designed to retain, and to present the other to our Henry VIII. The tapestries being executed, the Cartoons were treated with much neglect by those into whose hands they fell, who appear to have considered that they had served their purpose. When ultimately inquired for, some of them were lost and others spoiled. A few of the whole twenty-five exist, besides the seven at Hampton Court, and the subjects and mode of treatment in those that are wanting are known from the tapestries executed from them, and with such means of comparison it is satisfactory to know that among the best in the whole series are the seven, the view of which is one of several rich and pure enjoyments open to the harassed inhabitants of the great metropolis, by a short, easy, and now cheap excursion to the finest neighbourhood of London. Sorely are we tempted to recount the whole of these enjoyments—enjoyments of the road, and of the river, and of the hill; enjoyments of royal gardens, and parks, and palaces, and pictured halls—but we forbear. We cannot, however, but point out a new source of illustration to the Cartoons which has been lately opened at Hampton Court. As the visitor passes under one of the archways which connect the various courts which together form the palace, he will perceive on the left hand a broad staircase of stone, with a board on the wall painted with "To the Cardinal's Hall." Go up, by all means. We find ourselves in a large and very handsome hall, only just opened to the public, and which the workmen have not yet abandoned. The walls of this hall are completely covered with tapestries representing the history of Abraham. This work of tapestry is very interesting and curious in itself; but we only notice it now for the sake of indicating to the reader that it was for such tapestry as this, and destined to be thus hung on walls, that the Cartoons of Raffaelle were executed. It will thus be seen that the paintings were intended to represent the effect which the woven tapestry itself was to produce; and this will account for the peculiarity of style and effect in the Cartoons which has given occasion for much remark.

There is one matter, however, which it seems the peculiar province of a work like ours to record. It is not many years ago that Hampton Court was but little thought of or visited by Londoners; and when the enjoyments which it offered were all but absolutely beyond the reach of the classes who now throng to it by hundreds at every favourable occasion. Not longer back than 1823, an intelligent writer said of Hampton Court:—"From perpetually echoing to the more than regal revelries by which Wolsey's unbounded wealth enabled him to further the views of his equally unbounded ambition, these princely halls have come to be almost as silent as their dead master's tomb; from witnessing the proud airs and peerless glances of court beauties, and reflecting back the humble whispers of supplicating lovers, they have come to find their best boast in the painted effigies of these beauties that hang upon their otherwise bare walls; and they have nothing to echo back but the hurried footsteps *of a single domestic, who passes through them daily to wipe away the dust from their untrodden floors*, only that it may collect there again; or the unintelligible jargon of a superannuated dependent, as he describes *to a few straggling visitors* (without looking at either) the objects of art that have been deposited in them, *like treasures in a tomb*." All this has now passed away,—the floors are no longer untrodden; if there be dust upon them, it is the dust of many feet. The single domestic and ancient dependent have given place to a dozen spruce policemen, picked and dressed for the service; instead of being tortured by the unintelligible jargon of an aged and ignorant person who had to be paid for his interpretations, the visitor has the opportunity of purchasing the efficient and permanent services of a neat and useful catalogue of the various pictures and objects which these halls contain; and instead of "a few straggling visitors," some scores are found there on any fine day, while on Sundays and Mondays, and on every holiday, the place is absolutely thronged with Londoners, so that some regulations have been found necessary to enable them to survey the various rooms without confusion.

The once solitary village bears now evident signs of this concurrence—in the display of all kinds of conveyances in which the visitors have been brought, and in which they will return—the private equipages—the taxed cart—the stage coaches—the omnibusses—the vans—in "booking offices"—in places for the refreshment of the visitors—inns—tea-gardens—confectioners' shops. But these last are less numerous than might be expected, on account of the vicinity of Richmond, which has always been a favourite place of resort to the Londoners, and which, as a larger place, has much superior and more varied accommodations of the sort, without which we are afraid that even a trip to Hampton Court would be lightly esteemed by the comfort-loving people of our Babylon. And they are right in preferring Richmond as the place of rest and refreshment; for, apart from the palace and its grounds, Richmond is certainly a much pleasanter place than Hampton Court. Many, therefore, walk the distance between the two places; and there are also vehicles which traverse this distance only, without proceeding to London: while there are others, including the steamers, which pass between London and Richmond, without proceeding to Hampton.

Nor are the signs of the present, and, we are sure, abiding popularity of Hampton Court, confined to the neighbourhood of the palace. In the innermost recesses of London's mighty heart, the name of "Hampton Court" is written. Go where you will, into the high-road or the bye-road, into the public street or the narrowest lane, into the alley or the court, there is no escaping the eternal painted board (generally red with yellow letters), with sometimes a rude drawing of the conveyance—"VANS TO HAMPTON COURT." And occasionally of a Saturday evening, if the van-holder lives in a place wide enough for the display, the van, newly washed, and clean as a daisy, may be seen drawn up before his door, with the tempting announcement—"*This Van starts for Hampton Court to-morrow morning at eight o'clock.*" These vans are hung with curtains, and mounted on springs, and have very much resemblance to the *arabah*, which is the *only* wheel-conveyance in Turkey, but are far more convenient and comfortable.

The writer we have already quoted concludes his notice with the remark—"In the immediate environs of the palace, and the road leading to and passing through it, there is an air and appearance which I know not how to describe, otherwise than by calling it *courtly*. You feel, without knowing why, that you are in the presence of greatness; and all things that you see correspond with (or perhaps it is, they excite) this feeling. The great, wide, yet *unfrequented* road, *worn only in the middle, and grown with grass at the sides*—the great walls that line the wide pathways on either hand, and the great stately elms that stand out, here and there, almost into the middle of the road, as you see them nowhere else—all give an imposing ap-

pearance that I do not remember to have seen elsewhere."

The presence of all kinds of modern conveyances, and the movements to and fro of cheerful groups in holiday attire, have impaired much of this courtliness; the wide road is no longer grass-grown, but well worn by many wheels and many feet. But the elms are there; for there is life in a tree. Having on former occasions approached the palace in another direction, we did not notice them until our last visit, when their old gnarled rinds, and the enormous overhanging branches—themselves trees—which look as if ready to break down by their own weight, immediately arrested attention, and called for the strongest admiration.

So, then, there has been change—much change—in this quarter. Much of this may be ascribed to the immense facilities of cheap and easy conveyance in all directions; which have already, in the course of a few years, made quite a revolution in our social system. The very becoming abrogation of the fee formerly paid for viewing Hampton Court must also be taken into account. But we do not fear being mistaken in our calculation that this and similar manifestations in other directions are in a very great degree the result of a greatly increased relish among all classes for the many pure and ennobling enjoyments which art and nature offer.

When we first visited the Cartoons, we were not at all prepared for their peculiarity of style; and the paintings seemed at the first general glance to manifest an appearance of poorness and want of finish, which created a feeling of disappointment and regret; and almost induced us to feel that the Cartoons were seen to most advantage in good engravings. But it fortunately happened that different engravings after the several Cartoons had been placed below, and near the eye, for the sake of comparison. Some of these engravings were very excellent; but the result of a close comparison showed such a loss of power in the best of them, that our attention was forcibly thrown back upon the paintings themselves, that we might by searching find out wherein the great strength ascribed to them lay. We searched, and abundantly were we rewarded. What treasures did we not discover—and continue still to find out—for the search has been continued at every repeated visit, and will continue as long as we live, in the conviction that we shall always, as we have done, come away with facts, details, expressions, ideas, powers, which had escaped the most diligent of our previous researches. And so it will always be: for these are the productions of a creative mind—works not to be looked at, but to be studied—works before any one of which we may profitably spend not minutes but hours, seeking to penetrate the great mysteries of art and knowledge which it contains. With all reverence we must declare that it is in some respect with these works as with the Bible, in which, as is well known to the diligent and careful readers thereof, new impressions are made by, and new beauties discovered in, passages which have been read and re-read times without number.

One matter that has struck us much in all our views of these wonderful pictures is their great truth—not only truth of character and expression in the human figures, but the truth of circumstances and details. This evinces that Raffaelle did not place his whole dependence upon the force of his genius and his power of producing the effects he contemplated; but that he studied hard and well. He laboured to make himself acquainted with the most minute particulars of the history he undertook to paint; and not only so, but by careful study of books of travel in Palestine he endeavoured to render himself acquainted with the local characteristics of the spot which was the scene of the transaction he undertook to paint. This is a motive so little practised by painters generally, whether ancient or modern, that it deserves to be mentioned to the special honour of Raffaelle: for the want of it often obliges the man of knowledge and reading to turn with dissatisfaction and regret from some of the finest paintings of scriptural and classical subjects which the world contains. This, therefore, is one of the characteristics of the Cartoons, which in the ensuing pages we shall be particularly anxious to indicate.

The Cartoons were, as we have already stated, originally twenty-five in number. Taken together, and in their proper connection, they formed a pictorial history of the New Testament; the events of prominent importance being represented in orderly succession. This will be seen from the following list, in which we have arranged the subjects in their proper historical order:—

1. The Nativity.
2. The Adoration of the Magi.
3, 4, 5. The Slaughter of the Innocents.
6. The Presentation in the Temple.
7. *The Miraculous Draught of Fishes.*
8. The Descent of Christ into Hades.
9. The Resurrection.
10. Noli me Tangere.
11. Christ Supping at Emmaus.
12. *Christ's Charge to Peter* (usually, but erroneously, styled Christ Delivering the Keys to Peter).
13. The Ascension.
14. The Descent of the Holy Ghost.
15. *Peter and John Healing in the Temple.*
16. *The Death of Ananias.*
17. The Stoning of Stephen.
18. The Conversion of St. Paul.
19. *Elymas the Sorcerer struck with Blindness.*
20. *The Sacrifice at Lystra.*
21. *Paul Preaching at Athens.*
22. The Earthquake.
23, 24. Children at Play, catching birds, &c.
25. Justice.

From this list it appears that of the twenty-five subjects thirteen (if we include the Slaughter of the Innocents) belong to the history of Christ, and eight to the history of his Apostles; the remaining four not being Scriptural subjects. The Hampton Court Cartoons are those whose titles are printed in Italics. In these the proportions are reversed, only two of the seven pictures belonging to the history of Christ, while five belong to the history of the Apostles. Of these five, three refer to circumstances in the life of St. Paul, who is, upon the whole, the prominent figure in *this* collection. The precise place which the seven occupied in the historical series of twenty-one will at once be perceived from their position in the list we have given.

In reviewing this Catalogue the reader will probably remark with some surprise that in a series evidently intended as a continuous series of New Testament subjects, events of such paramount importance as the Transfiguration and Crucifixion are not included. The reason of this omission is probably found in the fact that the former of these grand events, as well as many others in the life of Christ, had been previously painted by Raffaelle, and that in taking a new course of Scriptural subjects he wished to avoid those on which he had previously exercised his powers. In fact, on turning to a list of this great painter's works, we find that the whole series of the Cartoons includes but one subject—the Adoration of the Magi—which he had previously painted, and that previous painting was but a small picture, executed in the early part of his career,

when his style lacked that freedom which it had acquired in those riper years in which the Cartoons were undertaken. As to the Transfiguration, he reserved that subject for the glorious picture—the crowning monument of his fame—which he commenced soon after the Cartoons were finished, and which he did not live entirely to complete.

We shall now address ourselves to the Cartoons at Hampton Court, or rather, to the subjects which they represent, taking them not in the order in which they are usually described, but in that historical order in which they occur in the list we have introduced.

The Miraculous Draught of Fishes is the subject which this order brings first under our notice.

This event occurred very early in the ministry of Christ. He had, indeed, performed several miracles, and had otherwise engaged the attention of the people by the parables and discourses which he delivered; so that, whenever he appeared, he was followed by crowds hoping to see some miracle performed by him, or to hear the new and noble doctrines which fell from the lips of one "who spake as one having authority, and not as the Scribes." But as yet his labours had been confined to the province of Galilee; and had, indeed, been divided chiefly between the town and neighbourhood of Nazareth, and the shores of the Lake of Gennesaret. At this time, however, he had been expelled from Nazareth (of which he was reputed a native), and resided principally at Capernaum, near the head of the lake. As yet he had no followers exclusively devoted to Him, and attending him in all his journeys and ministrations; but there were several who were his followers in the ordinary sense, that is, who heard him with attention and reverence, and who took every occasion which their avocations allowed of seeking his presence. Among these were four fishermen of the lake, Peter and Andrew, the owners of one fishing-boat; and the brothers James and John, to whose father, Zebedee, another boat belonged; and it would seem that the two boats commonly acted in partnership.

One day, as Jesus stood on the shore, he was thronged by the people who were anxious to hear him. To avoid the pressure, he entered the boat of Peter, which was close at hand; and when it had been thrust a little way into the water, he spoke to the people from thence. When he had concluded, he desired Peter to launch forth, and cast his nets into the sea. Now it happened that Peter and his companions had been out fishing all the night without success. This he intimated to Jesus: "Master, we have toiled all the night, and have taken nothing." And under such circumstances men are generally sore, and in a very fit frame of mind for rejecting advice and direction as an odious impertinence. But Peter, by a first manifestation of that faith which afterwards burned in him "stronger than death," added—"Nevertheless, at thy word I will let down the net." This was done; and immediately the net was filled with such a multitude of fishes, that the net was broken in the attempt to draw it. On this Peter and his brother called their partners, Zebedee's sons, to their assistance; and when, with this assistance, the draught was secured, *both* the boats were so filled, that there was reason to fear that they would sink. The whole party were astonished beyond measure at this prodigy, which their ill success all the previous night prepared them the more strongly to appreciate. But the effect upon Peter was the most marked. He was too skilful a fisher, too well acquainted with the lake, and with the fit times and seasons of his trade, not to see more in this than some of us—who are no fishermen, and know nothing of the lake—are willing to see. He saw and recognised the presence of one to whom the powers and operations of nature were subservient; and his enhanced perception of majesty in Christ gave intensity, by contrast, to the sense of his own utter unworthiness, and his unfitness for such a presence.* He therefore fell down at the Saviour's knees, and cried, "Depart from me; for I am a sinful man, O Lord!" What a prayer!—as if the patient should say to the physician—"Depart from me, for I am sick!" It was well for Peter that it was not granted. Nay, rather, instead of going from him, Jesus, in effect, called and invited him to a more close and intimate connection with himself, in terms which included a significant typical reference to the present act:—"Fear not: *from henceforth* thou shalt catch MEN."

This is the moment chosen by the painter—while the succession of the immediately preceding circumstances is indicated by the still lingering portions of the crowd upon the shore, and by the manner in which James and John (who are in the second boat with their father Zebedee) are still occupied with the net. Thus, also variety of action has been produced; and the picture is more effective, and the attention more concentrated on the principal persons, than it would otherwise have been. Andrew, similarly impressed with his brother, steps forward to share in his act and sentiment; and although the sons of Zebedee are otherwise engaged,

* The Rev. R. Cattermole, in his 'Book of the Cartoons,' notices the objections that are frequently and strongly felt by many against personal representations of the paternal Godhead, in which he concurs, so far at least as to consider even Raffaelle's delineations as unsatisfactory. He adds, however, "Not so in his representations of the incarnate God—the Eternal, the Infinite, veiled beneath the final and the finite. In the individual Divine Man, the artist is supplied with a type, the existence of which withdraws all impropriety from the attempt; and if it be objected, that he has failed adequately to depict the Godhead, we answer—to do so was not his object. He penetrates not below the covering of humanity which hides the Omnipotent from mortal view. If upon its surface he can trace some faint touches of the latent glory, he attains not only all that he is warranted in attempting, but, perhaps, all which in reality the human form of the Son of God, during his residence on earth, itself displayed.

"The 'Christs' of Raffaelle are, upon the whole, more successful than those of any other artist; with reference to the above view of what is required, they may be regarded perhaps as perfect. The exquisite figure before the reader will justify this assertion. *In both the action and form of our Saviour we discover the usual felicity of the artist's genius. The divine composure* of Omnipotence exercising authority over nature could scarcely be better expressed than in that simple and graceful posture in which he is seated—in the countenance radiant with benignity—in the lips, which, by their movement and their form, appear employed in modulating a voice replete with sweet and gentle yet powerful expression—in that hand which wields the elements, gracefully raised in accordance with the words whereby he moderates the emotions of the agitated Apostle. The character of the form and features, and even the drapery of Christ, are finely contrasted with those of his merely human companions. The head is in the most graceful style of masculine beauty; the delicate texture and flowing lines of the hair and beard harmonise delightfully with the sweetness and purity of every other part—even in these the divine superiority of the Friend of mankind is distinctly expressed:"—

" 'The man that shines as bright as God—not so,
For God he is himself that close lies under
That man—so close, that no time can dissunder
That bond; yet not so close, but from him break
Such beams as mortal eyes are all too weak
Such sight to see—or it, if they should see, to speak.

His hair . . . . . in small curls did twine,
As though it were the shadow of some light;
And underneath, his face as day did shine—
But sure the day shined not half so bright;
Under his lovely locks, her head to shroud,
Did meek Humility herself grow proud:—
Hither, to light their lamps, did all the graces crowd.'
Giles Fletcher."

we see by the direction of their looks that their attention is drawn to what is passing in the other boat: they see the prostration, they hear the confession of Peter; and they also hear and understand the impressive answer of Jesus. We are therefore prepared to learn that they, as well as Peter and Andrew, on reaching the shore—" left *all*, and followed him."

We have said that it is not our intention to expatiate on the artistical character of these productions. This has already been amply done in the present and other publications. We cannot, however, forbear from calling attention to one matter which has not by any means received the attention it deserves;—this is, that accuracy in the details and circumstances to which we alluded in a former page: of this, the present Cartoon is a very striking example.

It has been more than once remarked, as an evidence of Raffaelle's attention to the proprieties, that he has represented here not a shallow stream, but an expansive lake—such as was the Lake of Gennesaret: but it has not been remarked that this lake *is the very Lake of Gennesaret;* so that it is quite evident that the artist took great pains to make himself well acquainted with the locality of the scene which he had undertaken to represent. This he might do from the various descriptions which then existed, as well as from conversation with persons—pilgrims and monks—certain to be found at Rome, who had visited the lake. We have thus not only the true character of the banks, but of the birds which fly over, which skim the surface, and which frequent the shores of the lake, as well as of the very fish which inhabit its waters. The buildings along the shore are also more proper than might, at the first view, occur to the reader. They have a mixed Oriental and Roman character, which is peculiarly exact and proper with reference to the time of Christ, when Herod the Great and his sons had strewed the borders of the Lake with public and other buildings—temples, palaces, theatres, baths—in the Roman style of architecture. The works of this description were the most numerous towards that northern quarter of the lake which was the scene of the transaction which this picture commemorates.



[Christ's Charge to Peter.]

Christ's Charge to Peter, commonly, but erroneously, called *Christ Delivering the Keys to Peter*, is the next Cartoon in the series to which our attention is turned. In the complete series, four pictures intervene between this and the one which has engaged our notice. Yet it so happens that the absence of these four, so far from destroying or injuring the connection between them, has produced a very beautiful connection and opposition which the painter did not contemplate. In both, Christ and Peter are the principal characters; the scene of both is by the Lake of Tiberias, near the same spot; the boat and the net are introduced in both: on both occasions there had been a miraculous draught of fishes; the former was the opening, and this the closing act in Peter's connection with Christ; and in both there is nearly the same charge given to the Apostle under a differing similitude.

Nearly the whole public ministry of Christ had passed in the interval between these pictures. Christ had taught, and wrought miracles, and suffered death, and risen from the dead, and had more than once appeared to his disciples to satisfy them, that he lived, and to give instruction and comfort to them. It will be remembered that Christ was crucified at Jerusalem during the Passover; and during the following week, he, by his appearances to them, and his acts, had satisfied the Apostles that he had indeed risen in his own very person from the grave; though they had still very imperfect notions of the true design of the dispensation and of their own mission.

After the Passover week, the Apostles returned to Galilee, to which most of them belonged, and to which they had been directed to repair. Here such of them as had been fishermen, and lived on the borders of the Lake of Gennesaret, betook themselves to their old occupation—either as being necessary to their subsistence, or, which is more probable, concluding that their engagement with and for Jesus was at an end—whereas, in truth, it had scarcely more than commenced.

One evening Simon Peter, with James, John, Thomas,

Nathanael, and two others, went out to fish on the lake, and, as on the former occasion, toiled all the night in vain. When the morning broke, a stranger was perceived upon the shore, who called to them, "Children, have ye any meat?" They answered "No;" and were told that if they let down the net on the right side of their vessel, they should find enough and to spare. They did so, and were then unable to draw the net for the multitude of fish which it contained. This miracle convinced John, who is distinguished by the touching title of "the disciple whom Jesus loved," that the stranger, whose person they had not been able in the dimness of the morning to distinguish, was their own Master, and he whispered his conviction to Peter, who no sooner heard that it was the Lord, than the usual impulsiveness of his character would not permit him to tarry for the boat, but he threw himself into the water, to hasten to him. The others followed in the smaller boat, dragging after them the net, which they had not been able to draw in the usual way, and which, to their surprise, they found not to be broken, notwithstanding the number (153) of large fish which it contained.

When all were landed, they saw a fire, with fish broiling thereon, on which, with bread, the Saviour invited them to "Come and dine." And none of them durst ask him, "Who art thou?" knowing it was the Lord. After they had eaten, Jesus, touched probably by the characteristic manner in which Peter had just evinced his affection, turned to him and asked—"Simon, son of Jonas, lovest thou me more than these?" It will be remembered that at the Last Supper Peter had professed with vehemence his superior attachment to his Master, and that if all else should forsake him, yet *he* would be faithful unto death. The question, therefore, now put to him, was the same as asking him whether he still persisted in this profession. The natural ardour of Peter would have inclined him to utter the strongest expressions of devoted attachment; but checked and humbled by the consciousness of that terrible night when, before the cock crew thrice, he had twice denied his Master; and by the keen remembrance of that moment when "He had turned and looked upon Peter," in the judgment-hall, when the the third denial was yet upon his lips—subdued by this, he only ventured on a touching appeal to Christ's own consciousness of his love—"Lord, *thou knowest* that I love thee." The answer was, "Feed my lambs!" "He saith unto him again, the second time: 'Simon, son of Jonas, lovest thou me?' He saith unto him, 'Yea, Lord; thou knowest that I love thee.' He saith unto him, 'Feed my sheep.' He saith unto him the third time, 'Simon, son of Jonas, lovest thou me?' *Peter was grieved because* he said unto him the third time, 'lovest thou me?' And he said unto him, 'Lord, *thou knowest all things*, THOU KNOWEST THAT I LOVE THEE.' Jesus saith unto him, 'Feed my sheep.'" He then continued:—"Verily, verily, I say unto thee, when thou wast young, thou girdedst thyself, and walkedst whither thou wouldest; but when thou shalt be old, thou shalt stretch forth thy hands, and another shall gird thee, and carry thee whither thou wouldest not." This was understood to be an intimation to Peter by what manner of death he should "glorify God:" and accordingly the history of the church informs us that this eminent Apostle was, like his Master, crucified, and, not like him, *nailed*, but bound with cords to his cross.

Everything in the Cartoon indicates that *this* is the scene which the painter intended to represent, and not the metaphorical delivery of the keys to Peter, which took place a good while *before* the Crucifixion (*Matt.*, xvi. 19), and not near the Lake of Gennesaret. The sheep, the lake, the boat, the net, the prints of the nails in the hands and feet of Christ, the number of the Apostles (eleven, Judas being wanting*)—all clearly refer to a time posterior to the crucifixion and resurrection of Christ, and to no other. It is true Peter has the keys: and this has led to the misconception. But we do not think from this that the picture represents the Delivery of the Keys; nor ever that it proposes to *combine* that action with the final charge of "Feed my sheep!" For seeing that the time and *all* the circumstances refer to the latter transaction, it is obvious to consider that it is merely to distinguish and dignify his person that he is represented as holding the keys which had formerly been committed to him. The action of Jesus is also entirely indicative. He does not appear as delivering or as having just delivered the keys, nor Peter as receiving or having just received them—he hold them as his possession.

Peter and John Healing the Cripple is the singularly rich and effective painting which next occurs to our notice.

The Temple of Jerusalem, as it stood in the time of Christ and his Apostles, had many gates. Nine of them were very glorious, being overlaid with gold and silver, even to the side-posts and the lentils: but another gate, thirty cubits high and fifteen broad, was made entirely of Corinthian brass, and, from its splendour and elaborate workmanship, was much more admired than those covered with gold and silver. This was probably the "Beautiful Gate of the Temple," at which, or in whose corridors, the halt, the maimed stationed themselves day by day to receive the alms of those who entered or departed from the house of God.

The Apostles had returned from Galilee to Jerusalem. They had seen their Master ascend to heaven from the Mount Olivet; and on the day of Pentecost they had received the gift of tongues, and had been endowed with such miraculous powers as Christ himself had exercised. Already Peter had become a "fisher of men;" for on that great day, three thousand persons had been converted to Christ by his first discourse. Many circumstances, traceable even in the Gospels, had tended to create a peculiar intimacy between the ardent Peter and the loving John, who, indeed, had been friends and partners before they left all to follow Christ.

Not long after the day of Pentecost, and before occasion for the exercise of their miraculous powers had yet offered, Peter and John repaired together to the Temple at the hour of afternoon prayer. As they approached the "Beautiful Gate," they were asked for alms by a man who had been lame from his birth—who had never walked—and whom his friends carried daily to the Temple-gates. The Apostles were struck with compassion at the pitiable object before them; and Peter felt the faith in him to exercise the gift he had received. He said to the man, "Look on us;" and he looked well, expecting to receive money from them. Answering the expectation which that look conveyed, Peter said:—"Silver and gold have I none; but such as I have, give I thee: in the name of Jesus Christ of Nazareth, rise up, and WALK." As he said this "he took him by the right hand and lifted him up: and immediately his feet and ancle bones received strength; and he, leaping up, stood, and walked, and entered with them into the Temple, walking, and leaping, and praising God." The man was so well known, from his remarkable lameness, and from being daily seen at the Beautiful Gate, that this astonishing case attracted general attention, and produced a deep sensation, of

* In fact there were but seven "disciples" (including at least four Apostles) present on this occasion; but the licence of introducing the whole number, and making it eleven (not twelve, as it would have been at the time of delivering the keys to Peter), is as significant of time as the actual number of disciples would have been.

which Peter took advantage by declaring to the people there the doctrine of Christ, faith in whose name had made this hopeless cripple whole.

The moment of action chosen by the painter is that in which the Apostle takes the cripple by the hand and commands him, in the name of Jesus of Nazareth, to rise and walk. The fine contrasts of character and emotion in the different figures, and the skilful pictorial effects produced in this noble composition, have been indicated by a previous writer in the 'Penny Magazine' (No. 70); and we shall therefore limit our attention to one or two points which have not been clearly understood.

The gorgeous architecture and the effective distribution of the rows of columns have been very much admired; but Raffaelle has not in this had the full praise he deserves. In this we find marks of careful study and comparison; and we do not hesitate to declare that he exhibits such a distinct knowledge of his subject as few professed writers on biblical antiquities have manifested.

The proper fabric of the Temple and its courts, into which none but Israelites might pass, stood in a vast enclosed court, called the Court of the Gentiles, to which everybody had access. The principal gate of access to this outer court was the gate (called Shushan) on the eastern side: and it was the only gate on *that* side. Exactly opposite to this gate was the only gate on the east side of the inner and more sacred portion leading to the court of Israel. *This* was the Beautiful Gate. The extensive outer court of the Gentiles was surrounded by a broad and magnificent piazza or colonnade, supported by innumerable pillars of white marble. Josephus speaks of these extensive rows of marble pillars with rapture, declaring that the effect was incredible to those who never saw them, and an amazement to those who did. Now it is a portion of this colonnade which the painter has represented. The Apostles had entered the outer gate, and were proceeding under the colonnade to the inner Beautiful Gate, when the cripple arrested their attention. In the two right-hand compartments the view is intercepted and darkened by the walls of the inner fabric, while in that to the left a view of the clear sky and of the open court is obtained.

It may not be amiss to mention that the covered walk of this outer court was a place of great public resort, and that it was here Jesus himself delivered some of his most impressive discourses.

As to the *form* of the pillars, so little is said on the subject in the Scriptures or in Josephus, that the painter was left in a great degree to his own fancy. He has, however, embodied all the hints he could collect, and the pillars, therefore, exhibit the cherubs, the clustering vines, the lily-work, and other known ornaments of Hebrew architecture, displayed to singular advantage in combination with the spiral form which the columns have received from his hand.

The effect produced by the view of the open sky through the colonnade in the left-hand compartment cannot be too much admired; and we do not fail to remark that the artist has filled this compartment with light and pleasant objects, in unison with this intended relief. The women and boys of Raffaelle, in general, claim much admiration; and nowhere are they finer than in this picture. The female with the basket on her head, followed by the boy with two doves, forms a creation of surpassing beauty, sufficient alone to immortalise any picture in which it might be found.

These objects remind us of another explanation, which may not be unacceptable to the reader; the rather as it brings out another instance of Raffaelle's knowledge, and his exemplary attention to historical propriety. They are going into the Court of the Gentiles with doves and fruit. Now, in fact, there was a sort of market in that court, which was considered less holy than the more interior parts of the Temple. This market was allowed under the pretence of convenience to the people in obtaining near at hand such articles, animals, or birds as were used for offerings. This market, at which were sold oxen, sheep, lambs, kids, *doves*, &c., was held at the south side of the court; and being in itself undoubtedly as illegal as unseemly, and sanctioned only as a source of gain to the priests, our Saviour, on two occasions, drove all the dealers and their wares before him, across the court, towards the east gate of the centre wall, where he also overturned the tables of the money-changers who were stationed there.

By introducing two figures proceeding in that direction with doves, the artist has skilfully intimated the existence of this interior market, and has availed himself of it for the production of the two charming beings by whom this intimation is conveyed.

Since the preceding observations were written, we have met with two or three pages of interesting remarks on the Cartoons by an anonymous writer in the 'New Monthly Magazine,' in 1823, from which we willingly introduce one passage which refers chiefly to those from which the engravings in our present Supplement have been taken. He declares the grand characteristic of the Cartoons to be—"expression, depth, variety, consistency, and, above all, *unity* of expression. And this extends not only to the animated objects that they represent, but to the most apparently insignificant details that are introduced into them. The *hands* of the 'Paul preaching at Athens' are scarcely less eloquent and inspired than the countenance, and the very folds of his mantle speak as with a tongue. The storks that are seen in the 'Miraculous Draught of Fishes' stand on tip-toe, and clap their wings expectantly, as if the miracle had been worked for *them* alone; and the littleness of the boat in this picture (which has, I believe, been remarked on as preposterously *out of keeping* with the persons whom it contains) is so contrived purposely, in order to give a grandeur to the figures and an expansion to the sea, that they could have acquired by no other means. Let the pseudo-critic, who objects to this fine application of poetical licence, calculate the size that the boat in question ought to have been, on his principle, the figures being nearly as large as life; and then, if he happens to be an artist, let him paint a picture on the same subject accordingly—his canvas being of the size of that we are speaking of. Alas! his picture will be *all boat*—figures, storks, fishes, miracle and all, going for nothing. Is this what he would have, in place of the magnificent work before us? . . . I mention these as instances of the astonishing unity of expression prevalent in these works—infused into them perhaps in a great degree unconsciously on the part of the painter: but the more rather than the less admirable on that account, as evincing the absolute interfusion of the artist's spirit with that of the subject he was engaged upon; the entire subduing of all the faculties of the mind, 'even to the very quality' of that which was 'its lord' for the time being. Raffaelle's genius possessed this power of self-adaptation more than any other modern, except Shakspeare. He possessed it, indeed, in an infinitely inferior degree to Shakspeare, in point of extent and variety, but where it did reach, it was not inferior to his. It may fairly be conjectured, too, that Raffaelle limited the exercise of his genius consciously and purposely to subjects in which grandeur, grace, and beauty were predominant; and that, if he had attained the ordinary age of man, he would have practised and excelled in other departments of his art, no less than he did in these. In proof of this opinion, I would instance the figures of the two afflicted

persons in the Cartoon of 'The Beautiful Gate.' Nothing can be finer in their way—that is to say, more absolutely *true*—than the expression of these two figures; and yet nothing can be more shocking and disgusting."

With reference to these two figures, which have engaged much attention, we have no doubt that an artist of inferior powers would have chosen rather to render them "interesting," by regular features and an engaging expression of countenance. But it had not escaped the notice of Raffaelle, that in those who had from early youth, or all their lives, been cripples, a form and expression of countenance was generally developed the reverse of engaging, and which forms, in fact, one heavy portion of that affliction which such persons have to sustain. To have given such persons dignified heads would have been incongruous, however common in art; it would have been a pictorial lie; and no artist that ever lived knew better than the painter of the Cartoons, that, even pictorially, *all* truth is beautiful when truthfully applied and understood. Here, accordingly, the artist understood how even this unpleasant truth might become a beauty, by the effective contrasts which it would enable him to realise. This *beauty* in the picture—resulting from the power which a great mind possesses of rendering all things subservient to a great design—every one can now appreciate; and the *truth* every one can ascertain from his own observation. In fact, it is said that, in the determination to be true to nature, Raffaelle made choice of two well-known crippled beggars at Rome for his models.

Yet, while both the cripples are thus "marred" in countenance, there were perhaps never two men resembling each other less in character and expression. The man who is the object of the miracle is painfully deformed of countenance; but already he feels the new life tingle in his limbs, already he has begun to raise one of his legs, and finding it obedient to his will—his faith, already a gleam of wandering hope, appears in and begins to irradiate his countenance; and we can see that his aspect, not less than his limbs, is to be healed. How different the other man, who appears the very impersonation of a sturdy and saucy beggar. Being in the act of advancing, it would appear as if the pause of the Apostles before his brother cripple had attracted his attention, and he has hastened to claim a share in their bounty. He has heard the words—"Silver and gold have I none; but such as I have, give I thee:" and his countenance answers too plainly to be misunderstood—"What else has any one worth giving!" His firm and scornful incredulity of any good from persons who have no silver or gold, is expressed with great force, which we have not seen adequately represented in any engraving. It is evident that he has not that faith in the name of Jesus of Nazareth which might entitle him to be healed; and the artist thus meets the objection, "You have introduced two cripples, whereas the history notices but one: if another had been really present, might we not expect him also to be healed." To obviate this, the painter has not given them equal claims to the notice of the Apostles; and has, in fact, skilfully insinuated a reason why the other was not cured. In fact, no one in looking at the Cartoon seems to feel the least wish or expectation that he should be healed, or the slightest wonder that he was not: and this neutralization of our feeling in behalf of this cripple, being the very effect which the artist intended to produce, and which it was necessary he should produce, is in itself one of the strongest evidences of his consummate skill.



[Peter and John Healing the Cripple.]



[a, Teal; b, Wigeon, male and female; c Tame Swan; d, Wild Duck, male; e, Tame Duck male; f, Muscovy Duck; g, Domestic Goose.]

DOMESTIC WATER-FOWL.

Next to the gallinaceous order of birds, the natatorial or swimming order presents us with the most valuable of our feathered denizens of the farm-yard. Of these the goose and the duck are familiar to every one. But we may add the Muscovy or musk duck, common in many places; the Canada goose, kept rather as an ornament in a semi domesticated state on lakes or ponds in pleasure-grounds, than for the sake of its flesh; the Chinese goose, occasionally to be seen, and interbreeding with the common goose; and, lastly, the swan, semi-domesticated and the ornament of lakes and rivers.

That others of the duck tribe (*Anatidæ*) might be reclaimed and introduced into the farm-yard or pleasure-ground, is very evident,—indeed, the Mandarin teal, and the Summer duck, both pre-eminent for beauty, and, at least as it respects the latter, highly esteemed for the table, breed in the gardens of the Zoological Society.

From what we have said, it will appear that our domestic water-fowl belong exclusively to one tribe of

the natatorial order, namely, the Duck tribe, or, as naturalists term it, the *Anatidæ*. The general characteristics, as we observe them in the duck or swan, proclaim aquatic habits. The form of the body is boat-like; the plumage consists of an under vest of down (remarkable in some species, as the wild swan and the eider duck, for its softness and delicacy), and of an outer layer of smooth feathers, varnished with a subtle oily fluid which enables them to repel the water; the neck is long; the beak large, depressed, and usually broad; the edge of each mandible is provided with a series of laminated projections serving as strainers—with the exception of a sort of nail at the tip of the upper mandible, both are clothed with a smooth skin; the tongue is large and fleshy, and furnished on its edges with appendages useful for enabling the bird to separate its food from the mud and water taken into the mouth with it; the legs are short, and placed far backwards; the toes are spreading, and the three fore-toes are united by broad intervening webs; the wings are pointed, and the tail is short; the windpipe often presents curious flexures, or contractions and dilatations, or a hollow bony box, or drum, at its lower extremity, before dividing to pass into the lungs. The gait of the Anatidæ on land is awkward and constrained, but they swim with grace and ease. Vegetables, insects, shell-fish, and even fishes, constitute their diet—not, however, indiscrimately: some subsist exclusively on vegetables, while others, as the Scoter duck, feed on small crabs and bivalve molluscs, for the grinding down of which their thick muscular gizzard, lined with a tough leathery membrane, is well adapted.

Though the Anatidæ, as a tribe, are aquatic, some are more so than others; and in such as resort but seldom to the water, we find modifications of structure in the limbs and beak; and characters in the form of the body and texture of the feathers indicative of terrestrial, or at least but partially aquatic habits. The long-legged Cereopsis, or New Holland goose, is an example. On the contrary, some species rarely visit the land except for the purpose of breeding; while others feed on the land, and resort to the water for safety, or, floating on the water, seek their food among the weeds and herbage which grow on its border.

Many of the Anatidæ are migratory; indeed most of our European species, if not all, are so; for though a few species, as the sheldrake, and mallard, or wild duck, are to be classed among the permanent residents in our island, yet their numbers are augmented in winter by temporary visitors from the north. The high northern latitudes, in fact, may be regarded as the summer resort and nursery of the European Anatidæ; and thence, as winter locks up the rivers and lakes with ice, they wing their way southwards, to seek in more temperate latitudes a convenient asylum.

From these general and discursive observations let us advance to a closer review of the most common and familiar of our *water-fowl*. Our lakes and rivers have no ornament more attractive than the tame swan (*Cygnus olor*). This noble bird is not, however, indigenous in our island; and though it now breeds with us, and wanders at will, it must be classed among the reclaimed species. In its truly wild state it inhabits the eastern portions of Europe and the adjacent parts of Asia, where extensive lakes or inland seas, large rivers, and wide-spread morasses afford it a congenial abode. The tame or mute swan is abundant on the Thames, each pair having their exclusive range or district, at least during the breeding season. The nest, in the formation of which both the male and female labour, is made on the bank among reeds or oziers, or on one of the ozier islands. It consists of a mass of sticks, twigs, &c. raised sufficiently high to prevent its being overflowed by any rise of the water. The eggs are six or eight in number. While the female is engaged in the duty of incubation, she is assiduously guarded by the male, who manifests great anger if she is approached. On one occasion, rowing with a friend on the Thames, we approached a female swan on her nest, seated on an island near Staines bridge; the male instantly darted forward to attack us, and gave us chase for a full quarter of a mile, propelling himself so vigorously and rapidly along, that it was with difficulty we could keep a-head. It was, in fact, an amusing rowing-match against a swan.

The young birds, or cygnets, are not white, but are covered with a greyish brown plumage; the white in its purity not being acquired till the third year. The cygnets, during the first summer and autumn, are under the care of the old pair, who guard them diligently. The ensuing spring brings new cares for the old pair, and the young form flocks which continue unbroken till the white plumage is assumed, when the birds mate, and seek their respective breeding-places. During the winter large flocks of old and young birds may be often seen. The flesh of the cygnet was formerly in high estimation, and is still occasionally eaten.

Besides the tame swan (*Cygnus olor*), there are three European wild species. Of these, one has been recently characterised; it is allied to the tame swan, but instead of the legs, toes, and webs being black, as in the latter, they are of a pale ashy grey. The cygnets are white. Mr. Yarrell, the first describer of this species (of which several individuals are living, and have bred in the gardens of the Zoological Society), observes that "this species had been known to him for some years past, as an article of commerce among the London dealers in birds, who receive it from the Baltic, and distinguish it by the name of the Polish swan. In several instances these swans had produced young in this country, and the cygnets when hatched were pure white, and did not at any age assume the brown colour borne for the first two years by the young of all the other known species of swans." (*Proc. Zool. Soc.*, 1838, p. 19.) To this species Mr. Yarrell gave the name of *Cygnus immutabilis*, in allusion to its permanency of colour.

During the severe winter of 1837-8, "flocks of this swan were seen pursuing a southern course along the line of our north-east coast from Scotland to the mouth of the Thames, and several specimens were obtained." One flock of thirty and several smaller flocks were seen on the Medway. The skull of this species differs in certain points from that of the tame swan, according to Mr. Pelerin, who has published a paper on the subject in the 'Magazine of Nat. Hist.,' April, 1839. Of the two remaining swans, one is the Wild Swan, Hooper, or Whistling Swan (*Cygnus ferus*), a native of the whole of the northern hemisphere, breeding on the borders of the arctic circle, and migrating southwards in winter. In America the emigrations of this swan are bounded by Hudson's Bay on the north, and extend southwards as far as Louisiana and the Carolinas. It extends its winter visits in Europe and Asia as far as the warmer latitudes, and passes even into Egypt. The windpipe of this swan is remarkable for a loop which passes into the substance of the keel of the breast-bone.

The last European species is Bewick's Swan (*Cygnus Bewickii*), which has been confounded with the Hooper, but which, as Mr. Yarrell has demonstrated, is a distinct species. Like the preceding, it is a native of the high northern regions, migrating south in winter. Its windpipe is of smaller calibre than that of the Hooper, and passes far more deeply into the keel of the breast-bone.

Less ornamental than the swan, but more profitable,

the domestic goose next presents itself. The origin of this valuable bird is undoubtedly the grey lag wild goose (*Anser palustris*, Flem.; *Anser cinereus*, Meyer); but at what period or by whom the domestication of the race was achieved, we have no information.

The Grey Lag was formerly abundant in England, breeding in great numbers in the fenny counties, but of late years it has become scarce, owing, no doubt, to the advance of cultivation. It is common in the central and eastern parts of Europe and in northern Asia, tenanting marshes, lakes, and inland seas. During the winter, flocks occasionally visit our island, but these are far less numerous than the bean-goose (*Anser segetum*, Steph.), and an allied species, recently described, the pink-footed goose (*Anser phœnicopis*, Bartlett, *Proc. Zool. Soc.*, 1839).

The grey lag is a bird of remarkable vigilance and shyness, and cannot be approached within gunshot range without extreme caution. During the night the flock retire to the water for repose, a sentinel keeping watch; and during the day, while feeding, the same precaution is observed; on the least alarm, a cry is uttered, and the whole flock are on the wing. The height at which they fly is very great, and they proceed either in a single line or in two converging lines like the letter V, the angle foremost.

Grasses, grains, and the tender blades of rising wheat constitute the food of this species; and as we may observe in the tame goose, the beak is admirably qualified for nipping off each blade. The goose is indeed a close grazer, and will keep the grass of a common short and fine.

The domestic goose is subject to great variation in its markings, white often predominating, and the male or gander is usually of a pure white. The general colour of the grey lag is brownish-grey above, and greyish-white below, the feathers having paler margins, the upper and under tail-coverts are pure white; the bill is orange-red; the feet tile-red.

The habits and manners of our domestic goose are too well known to need description; nor need we dilate upon the value of this bird in a commercial point of view, nor its excellence as a delicacy. Vast flocks are kept in the fenny districts by breeders, who derive profit from the sale of the feathers, and also from the young birds, which are sent in multitudes to the London markets.

[To be continued.]

AN ANTIQUE PORTRAIT.

The following sketch, by the first Earl of Shaftesbury, is introduced in the 'Connoisseur,' a periodical work published in 1755, with the remark that "a mere country squire, who passes all his time among dogs and horses, is now become an uncommon character: the most awkward inheritor of an old mansion-house is a fine gentleman in comparison to his forefathers;" and one of the causes for this change is that "now every London refinement travels to the remotest corner of the kingdom."

"*The Character of the Honourable W. Hastings, of Woodlands, in Hampshire; second son of Francis, Earl of Huntingdon.*

"In the year 1638 lived Mr. Hastings; by his quality son, brother, and uncle to the Earls of Huntingdon. He was peradventure an original in our age: or rather, the copy of our ancient nobility, in hunting, not in warlike times.

"He was low, very strong, and very active; of a reddish flaxen hair. His clothes always green cloth, and never all worth (when new) five pounds.

"His house was perfectly of the old fashion, in the midst of a large park well stocked with deer; and near the house rabbits to serve his kitchen; many fish-ponds, great store of wood and timber, a bowling-green in it, long, but narrow, full of high ridges, it being never levelled since it was ploughed. They used round sandbowls; and it had a banqueting-house, like a stand, built in a tree.

"He kept all manner of sport hounds, that ran buck, fox, hare, otter, and badger; and hawks, long and short winged. He had all sorts of nets for fish. He had a walk in the New Forest, and the manor of Christchurch. This last supplied him with red deer, and sea and river fish. And indeed all his neighbours' grounds and royalties were free to him, who bestowed all his time on these sports. Every neighbour was very welcome to his house, whenever he came. There he found beef, pudding, and small beer in great plenty. A house not so neatly kept as to shame him or his dirty shoes: the great hall strewed with marrow-bones, full of hawks' perches, hounds, spaniels, and terriers: the upper side of the hall hung with fox-skins of this and the last year's killing; here and there a polecat intermixed; gamekeepers' and hunters' poles in great abundance.

"The parlour was a large room as properly furnished. On a great hearth paved with brick lay some terriers, and the choicest hounds and spaniels. Seldom but two of the great chairs had litters of young cats in them, which were not to be disturbed; he having always three or four attending him at dinner; and a little white stick of fourteen inches lying by his trencher, that he might defend such meat as he had no mind to part with to them. The windows (which were very large) served for places to lay his arrows, cross-bows, stone-bows, and other such-like accoutrements. The corners of the room full of the best-chose hunting and hawking poles. An oyster-table at the lower end, which was of constant use twice a day all the year round; for he never failed to eat oysters before dinner and supper, through all seasons: the neighbouring town of Poole supplied him with them.

"The upper part of the room had two small tables and a desk, on the one side of which was a church Bible, and on the other the 'Book of Martyrs.' On the tables were hawks'-hoods, bells, and such like; two or three old green hats, with their crowns thrust in so as to hold ten or a dozen eggs, which were of a pheasant kind of poultry he took much care of and fed himself. Tables, dice, cards, and boxes were not wanting. In the hole of the desk were store of tobacco-pipes that had been used.

"On one side of this end of the room was the door of a closet, wherein stood the strong beer and the wine, which never came thence but in single glasses—that being the rule of the house exactly observed: for he never exceeded in drink or permitted it.

"On the other side was the door into an old chapel, not used for devotion. The pulpit, as the safest place, was never wanting of a cold chine of beef, venison pastry, gammon of bacon, or great apple-pie with thick crust extremely baked.

"His table cost him not much, though it was good to eat at. His sports supplied all but beef and mutton, except Fridays, when he had the best salt fish (as well as other fish) he could get; and was the day his neighbours of best quality most visited him. He never wanted a London pudding, and always sung it in with "my part lies therein a." He drank a glass or two of wine at meals; very often syrup of gilliflower in his sack; and had always a tun-glass, without feet, stood by him, holding a pint of small beer, which he often stirred with rosemary.

"He lived to be a hundred; never lost his eyesight, but always wrote and read without spectacles; and got on horseback without help. Until past four-score he rode to the death of a stag as well as any."



[The Peat-Gatherer.]

THE PEAT-GATHERER.

Here is a sketch—a portrait—of one of those who eke out a scanty subsistence by the appropriation of some of the productions of nature which have scarcely passed into the condition of property. Near this old woman's cottage there is a peat-moss; and thither on the fine autumnal days does she take her course, to load that basket which she bears with the lumps of decomposed roots and fibres which, dried in the sun, are to furnish her poor hearth with its winter's warmth. Let not the more fortunate think contemptuously of her humble and, to a certain extent, unprofitable labours. A penny would perhaps represent the commercial value of the fuel which she thus daily accumulates; but it is better to accumulate her small capital of peat than to do nothing. Society has no further need of her services. There was a day when she took her share of the toils of the field: seed-time and harvest saw her busy. She was once a careful housewife, and had higher duties. She was a wife and mother. She is now alone in her wretched cabin. But it is her duty to live on, and to make her existence as pleasurable as she can. She has a confiding belief that—

> "He that doth the ravens feed,
> Yea, providently caters for the sparrow,"

will not let her perish. In this trust she employs her few remaining energies to possess something which is of too small value to be appropriated, but which is much to her. She has her little store of gleaned corn; the fishermen on her coast have bestowed on her some herrings out of their abundant draughts,—and these she has salted; her heap of peat is daily increasing. Why then should she fear the winter?

Our greatest living poet is, as all great poets must be, the poet of the poor. It is amongst the poor that they have to study the unconventional aspects of humanity—natural feelings, warm affections, undoubting faith, elevating and purifying what externally appears coarse and revolting in the every-day existence of those who must labour with their hands from the cradle to the grave. Wordsworth has a story which superficial critics have made the subject of their ridicule—that of 'Goody Blake.' Some may call it a homely story; but there is deep meaning in it:—

> "Old Goody Blake was old and poor;
> Ill fed she was, and thinly clad;
> And any man who passed her door
> Might see how poor a hut she had.
>
> All day she spun in her poor dwelling:
> And then her three hours' work at night,
> Alas! 't was hardly worth the telling,
> It would not pay for candle-light.
> Remote from sheltering village green,
> On a hill's northern side she dwelt,
> Where from sea-blasts the hawthorns lean,
> And hoary dews are slow to melt.

By the same fire to boil their pottage,
Two poor old dames, as I have known,
Will often live in one small cottage;
But she, poor woman! housed alone.
'Twas well enough when summer came,
The long, warm, lightsome summer-day,
Then at her door the canty dame
Would sit, as any linnet gay.

But when the ice our streams did fetter,
Oh! then how her old bones would shake,
You would have said, if you had met her,
'Twas a hard time for Goody Blake.
Her evenings then were dull and dead!
Sad case it was, as you may think,
For very cold to go to bed;
And then for cold not sleep a wink.

O joy for her! whene'er in winter
The winds at night had made a rout;
And scattered many a lusty splinter
And many a rotten bough about.
Yet never had she, well or sick,
As every man who knew her says,
A pile beforehand, turf or stick,
Enough to warm her for three days."

This poor old woman felt it hard always to distinguish between what was spread in the lap of nature for her to pick up, and what society had assigned to individuals. A hedge was a temptation to her when windfalls of wood were scarce; and Harry Gill, the farmer, seized her in the act of pulling a stake. The terrified woman prayed that the relentless man might "never more be warm;" and the story says that he, who did not feel that her trespass was venial, tasted the bitterness of that cold which hovers round the emberless hearth of poverty, even to his dying day.

This is poetical exaggeration; but the story is calculated to sink deep into the reflecting mind. In the solitary places with which even the most populous parts of our country abound, there are many such as Goody Blake, who dwell alone, carrying on a constant warfare with the bitterest penury. It may be said that the law has provided a refuge where the sick and the aged may be comfortably maintained. And many, as we know, avail themselves of this just assistance; and they are well treated. But it is impossible to deny that there are feelings amongst the poor stronger even than the desire to escape the heaviest inflictions of want. They cling to the hut, in their solitary age, which has been the home of gladness in their social youth. The old things by which they are surrounded are far dearer to them than what is strange and unfamiliar. And we must not deal harshly with those feelings which belong to the higher parts of our nature. We must not attempt to tear the sapless trunk from the soil where it once budded and blossomed. Let charity address itself to the Goody Blakes, not in the undiscriminating form of alms-giving, but in that most considerate shape which benevolence puts on when it gives some stimulus even to the feeblest efforts of industry. There was a time when an old woman in a desolate cottage was held to be a witch:—

"There in a gloomy hollow glen she found
A little cottage built of sticks and reeds
In homely wise, and wall'd with sods around;
In which a witch did dwell, in loathly weeds
And wilful want, all careless of her needs;
So choosing solitary to abide
Far from all neighbours."

Spenser has thus described what two centuries ago, and indeed in much more recent times, was the popular notion of an old woman whose destiny compelled her "solitary to abide." These prejudices are past. But the progress of reason, which has driven out such superstitions, may have its prejudices also. It may think an old solitary woman, or an aged couple, dwelling in

"A little cottage built of sticks and reeds,"

as persisting in "*wilful* want." It would see the hut and its inhabitants succeeded by what belongs more to utility. Reason may not be quite right in such matters The patience, the hope, the pious trust, which the endurance of so much evil implies, are for example. Philosophy may here learn something better than she can teach. We are not to measure happiness by the command of external comforts. In the light embers of the poor Peat-gatherer's fire there may be associations—recollections of the past, aspirations for the future—which no other fire-side could give

BURNS.

[Concluded from p. 355.]

BURNS had bid farewell to his friends; his chest was already on its way to Greenock, and he himself was about to follow, when a most kindly and encouraging letter from Dr. Blacklock, whom Mr. Cunningham calls "a middling poet, but a most worthy man," at once changed his determination. The Doctor said therein, it was "much to be wished, for the sake of the young man, that a second edition, more numerous than the former, should immediately be printed;' and Burns was but too happy to listen to the recommendation. It "fired me so much," says the latter, "that away I posted to Edinburgh without a single acquaintance or a single letter of introduction." In the Scottish metropolis, however, he did not long remain unnoticed. The historian Robertson, Dugald Stewart, and Henry Mackenzie were foremost in acknowledging the claims of the "inspired ploughman" to a lofty rank among the poets of their common country; and they, and the brilliant circles of rank and fashion among which Burns was soon continually found, were astonished at his self-possession and extraordinary conversational powers. "The attentions which he received," says Dugald Stewart, "during his stay in town, from all ranks and descriptions of persons, were such as would have turned any head but his own. I cannot say that I could perceive any unfavourable effect which they left upon his mind....Among the poets whom I have happened to know, I have been struck in more than one instance with the unaccountable disparity between their general talent and the occasional inspirations of their more favoured moments. But all the faculties of Burns's mind were, as far as I could judge, equally vigorous, and his predilections for poetry were rather the result of his own enthusiastic and impassioned temper, than of a genius exclusively adapted to that species of composition. From his conversation I should have pronounced him to be fitted to excel in whatever walk of ambition he had chosen to exert his abilities." Under the patronage of the Earl of Glencairn and the eminent men we have mentioned, appeared the second edition of Burns's poems. This was towards the close of the year 1786; and before the cry of the cuckoo was heard, to use Burns's own expression, in the following year, not less than two thousand eight hundred and odd copies had been subscribed for by little more than fifteen hundred subscribers. All things smiled upon the joyous bard. Not that he was at all unaware of the precarious character of one of the consequences of his reputation, the countenance and patronage of the great and powerful. "I have formed many intimacies and friendships," he writes, in a letter to Dr. Moore, "but I am afraid they are all of a too tender construction to bear carriage a hundred and fifty miles:" and in the very dedication of his poems to the noblemen and gentlemen of the Caledonian Hunt, he remarks, "the poetic genius of my country found me, as

the prophetic bard Elijah did Elisha—at the plough;" and seems to anticipate that it will so leave him, in its concluding sentences: "Nor do I present this address with the venal soul of a servile author looking for a continuation of these favours: I was bred to the plough, and am independent." The profits of the publication amounted to nearly five hundred pounds. After a residence of little more than five months in Edinburgh, he quitted that city to make a tour through the border counties. Many characteristic passages marked this journey. On crossing the Tweed at Coldstream, "as soon as he had reached the English side, he took off his hat, knelt down, and with extreme emotion, and a countenance rapt and inspired, prayed for and blessed Scotland, by pronouncing aloud the two concluding verses of 'The Cotter's Saturday Night.'"

In his course up the Teviot and the Jed, he called on an old gentleman, who showed him an arm-chair that had belonged to the poet Thomson. Burns exhibited the veneration that men of true genius generally have for each other, by reverently examining the relic, and almost refusing to sit down in it. He had, we may observe by the way, previously displayed similar feelings at Edinburgh, where one of his earliest cares was to find out the localities that had long been sacred to the poet's heart—the grave of Ferguson—where he knelt down and kissed the sod, and the house of Allan Ramsay. On the 13th of May he spent an hour among the ruins of Dryburgh, and passed over some broken ground in the neighbourhood, where his mare could scarcely keep her feet, unconscious that on the one spot would rise the magnificent home (Abbotsford), and that in the other would rest the honoured remains, of a man whose reputation would even exceed his own; yet was the poet the very earliest to prophesy the future reputation of the great romancist.

Burns returned to Mossgiel in 1787. His mother meeting him at the door, with tears in her eyes, and a world of pride, joy, and affection in her heart, that could find vent only in the simple but touching words —"Oh, Robert!" The next few months were spent in similar wanderings, and in visits to Edinburgh, where already he found his titled friends look coldly on him. He grew restless and dissatisfied. But in 1778 he married Jean Armour, advanced two hundred pounds to his brother Gilbert, and with the remainder of his pecuniary possessions stocked the farm of Ellisland in Dumfriesshire, and immediately busied himself in the duties of his new engagement, and in those of the Excise-office to which he now belonged. He obtained his appointment as an exciseman principally through Grahame of Fintray, a friend whom he has made memorable by his poems. "I have chosen this, my dear dear friend," writes Burns to Margaret Chalmers, "after mature deliberation. The question is not at what door of fortune's palace shall we enter in, but what doors does she open for us. I was not likely to get anything to do. I got this without any hanging on or mortifying solicitation; it is immediate bread, and though poor in comparison of the last eighteen months of my existence, 'tis luxury in comparison of all my preceding life." We must add on this matter one or two observations by Mr. Cunningham. He says, "Gauger is a word of mean sound, nor is the calling a popular one; yet the situation is neither so humble nor the emoluments so trifling as some of the poet's southern admirers have supposed. A gauger's income in those days on the banks of the Nith was equal to three hundred a year at present in London; an excise-officer is the companion of gentlemen; he is usually a well informed person, and altogether fifty per cent. above the ordinary excise-officers on the banks of the Thames."

Ellisland consisted of a beautifully situated, but unenclosed and unimproved piece of ground, measuring somewhat more than a hundred acres. A dwelling-house and the various farm-buildings required, had to be built. The 'onstead' to which he conducted his wife, as soon as it was prepared for her reception, shows the poetical taste which had presided over the arrangements. Through the centre of a fine alluvial plain skirted by mountains of considerable elevation, the Nith, a broad and copious stream, pursues its way to the Solway. The right or west bank here rises in a gravelly precipice about forty feet above the stream, while the opposite bank consists of a low hollow or meadow, out of which, about a mile from Ellisland, rise the towers of Dalswinton. Burns's farm-buildings were situated near the verge of the precipice or scaur alluded to, in such a way that, as Mr. Cunningham remarks, their afternoon shadow fell across the river upon the opposite fields. The house was small, containing only an ample kitchen, which was to serve also as the dining-room, a bed-room to hold two beds, a closet to hold one, and a garret for the female servants. The garden was a little way from the house; along the river side ran a pretty footpath southward, another leading northward afforded fine views of the Nith, while half way down the steep declivity was a spring of beautiful water for the supply of the household. Some of the panes yet exhibit Burns's love of scribbling upon such frail tablets. On one we read Pope's noble line, "An honest man 's the noblest work of God.' At Ellisland were written some of the best of his songs, the exquisitely pathetic verses to 'Mary in Heaven,' 'Tam O'Shanter,' &c. &c. It was in the stack-yard to the left of the house that Mrs. Burns followed her husband one evening during harvest, noticing that he was in a melancholy or unhappy mood. She found him walking backward and forward, gazing on the starry sky. As he had been unwell, she entreated him to come into the house, and he promised compliance. A second time she went to him, found him in the same place, and again he promised obedience to her wishes. Still remaining absent, she went to him a third time, and found him "stretched on a mass of straw, with his eyes fixed on a beautiful planet, 'that shone like another moon.'" He now yielded to her request, and immediately wrote out the verses commencing—

"Thou lingering star, with lessening ray
That loves to greet the early morn,
Again thou usherest in the day
My Mary from my soul was torn.
O Mary! dear departed shade!
Where is thy place of blissful rest?
Seest thou thy lover lowly laid?
Hear'st thou the groans that rend his breast?"

The circumstances under which 'Tam O'Shanter was produced were of a very different character. The name, we may premise, was taken from the farm of Shanter in Kyle; the rude germs of the story from tradition. Mrs. Burns relates that observing Robert walking with long swinging sort of strides, and apparently muttering as he went, she let him alone for some time; at length she took the children with her, and went forth to meet him. He seemed not to observe her, but continued his walk: "On this," says she, "I stept aside with the bairns among the broom—and past us he came, his brow flushed, and his eyes shining; he was reciting these lines—

"'Now—Tam! O Tam! had thae been queans
A' plump and strapping in their teens,
Their sarks, instead of creeshie flannen,
Been snaw-white seventeen hunder linen!
Thir breeks o' mine, my only pair,
That ance were plush, o' gude blue hair
I wad hae gi'en them off my hurdies!
For a'e blink o' the bonnie burdies!'

"I wish ye had but seen him he was in such ecstacy that the tears were happing down his cheeks." Had Ellisland been successful there seems every reason to suppose that the poet would have been happy, perhaps long lived, and the author of writings even of a still higher class than any he has left us. That he meditated such things we know, but unfortunately the repose necessary for their accomplishment was denied to him. Ellisland, instead of succeeding, swept away all the money the poet had reserved to himself from the profits of his poems, and in 1791, after a sale of his stock and part of his furniture, he removed to Dumfries, where he had obtained a better Excise appointment.

At Dumfries Burns took a house near the lower end of the Bank Vennel, and dismissing all further ideas of farming, trusted entirely to the Excise Board for the means of living. And there were situations in its gift which would have left Burns a happy and contented man for life. They were not for him, however. A charge was made against him by some malicious busybody, and the Board instead of treating it with the contempt it deserved, set on foot a regular inquisition into Burns's political tenets and conduct; and this in connection with a man whose independence formed the most striking trait of his moral character! Burns thus describes his feelings and thoughts at this most unhappy epoch in his history. He is writing to his friend Grahame of Fintray; the date is December, 1792:—"I have been surprised, confounded, and distracted by Mr. Mitchell, the collector, telling me that he has received an order from your Board to inquire into my political conduct, and blaming me as a person disaffected to government. Sir, you are a husband and a father. You know what you would feel to see the much-loved wife of your bosom and your helpless prattling little ones turned adrift into the world, degraded, and disgraced, from a situation in which they had been respectable and respected. I would not tell a deliberate falsehood, no, not though even worse horrors, if worse can be than these I have mentioned, hung over my head; and I say that the allegation, whatever villain has made it, is a lie! To the British Constitution, on Revolution principles, next after my God, I am most devoutly attached." Enclosed with this letter was another to be laid before the Board, disclaiming all idea of setting up a republic, and expressing his adherence to the constitutional principles of the Revolution of 1688. He, however, owned at the same time, with a manly courage, that he felt corruptions had crept in, which every patriotic Briton desired to see amended.

"This last remark," says the poet, "gave great offence; and one of our supervisors-general, a Mr. Corbet, was instructed to inquire on the spot, and to document me,—that my business was to act, not to think; and that whatever might be, men or measures, it was for me to be silent and obedient." Rightly did a nobleman of the very administration under which such things were done, remark upon the poet's judges, "they are as absurd as they are cruel." Burns was "partly forgiven," but from henceforward all his hopes of advancement were blasted. And consequently, from that time may, we think, be dated that downward course which most of his biographers state him to have taken from the period of his residence in Dumfries, but which we think has been much exaggerated by some of them. Findlater, a brother officer, says he was "exemplary" in his attention to his duties, until disease and accumulated infirmities came upon him: and that, whilst seeing more of him than any other person, he "never beheld anything like the gross enormities" with which he was charged after his death.

At midsummer, 1794, Burns removed from the Bank-Vennel to Milchole-brae, since called Burns-street, where he leased a plain and humble, but commodious house. The street stands near the bleaching or parade ground on the river side, a favourite walk of the citizens of Dumfries. Here he was often seen, within the open door, reading among his children, with his wife moving about, arranging matters connected with the details of her household. Darker and darker grew the scene as death approached. An excruciating rheumatism reduced him to a deplorable state. The Excise then only allowed him half-pay, as was customary; and when he petitioned the Board, saying, "if they do not grant it, I must make my account with an exit truly *en poëte;* if I die not of disease, I must perish with hunger,"—it was still refused. Many of his happiest songs had been written as contributions to Thomson's 'Collection of Original Scottish Airs;' and at an early period of the acquaintance of the two men, Burns had almost quarrelled with his friend for sending him five pounds, remarking, that in the honest enthusiasm with which he engaged in the work, it would be prostitution of soul to talk of money, fee, &c. He was now, however, obliged to write in a different strain. On the 12th of July Thomson received from him a letter, in which he said: "After all my boasted independence, cursed necessity compels me to implore you for five pounds. A cruel haberdasher, to whom I owe an account, taking it into his head *that I am dying*, has commenced a process, and will infallibly put me in gaol. Do, for God's sake, send me that sum, and that by return of post. Forgive me this earnestness; but the horrors of a gaol have made me half distracted. I do not ask all this gratuitously, for upon returning health I hereby promise and engage to furnish you with five pounds' worth of the neatest song genius you have seen." Of course he received the money he desired, but no health returned to enable the high-spirited man to keep this voluntary pledge. Sea-bathing in the Solway relieved for a time the pains in the limbs, but his appetite failed, and melancholy preyed on his spirits. He grew feverish on the 14th of July (1796), and desired to be conducted home. He returned on the 18th, and the news soon spread through the town that he was dying. "Who do you think will be our poet now?" inquired with much simplicity one of the numerous persons congregated in knots about the street. His wit and good humour broke out in some of his last recorded sayings. To Gibson, a brother volunteer, who sat by the bedside in tears, he said, smiling, "John, don't let the awkward squad fire over me." As to Burns woman owed much for the thousand charming things he had said and sung of them: to woman was he in return indebted, during the last few days of his life, for an alleviation of his pains and anxieties. With all the poet's admirers let the name of Jessy Lewars be held in affectionate esteem and honour; she it was who, when Mrs. Burns was in hourly expectation of her confinement, and the poet's children in their youth and helplessness, required, instead of being able to render, sympathy and support, "acted with the prudence of a sister and the tenderness of a daughter, and kept desolation away, though she could not keep disease." It was on the fourth day after his return, that as his attendant held a cordial to his lips, the poet swallowed it eagerly, rose almost erect in the bed, extended his hands, sprang forward nearly the whole length, and died. He was but in his thirty-seventh year. He was buried with the military honours he had deprecated on the 25th, Mrs. Burns giving birth almost at the same hour to a son, who lived but a short time. The old kirkyard of Dumfries was the poet's burial-place. On the 5th of June, 1815, the grave was opened to remove the body to a more commodious part. The coffin was partly destroyed, but the dark and curling locks looked as

fresh and glossy as ever. A 'showy' mausoleum, with a *Latin* inscription, now marks out, to the pilgrims who daily visit the place, the object of their search.

We conclude this paper with a brief summary of his poetical characteristics, from the pen of Mr. Thomas Carlyle, which describes them, we think, very happily. "The excellence of Burns is indeed of the rarest, whether in poetry or prose; but at the same time it is plain and easily recognised—his sincerity—his indisputable air of truth. Here are no fabulous woes or joys; no hollow fantastic sentimentalities; no wire-drawn refinings either in thought or feeling; the passion that is traced before us has glowed in a living heart; the opinion he utters has risen in his own understanding, and been a light to his own steps. He does not write from hearsay, but from sight and experience; it is the scenes he has lived and laboured amidst that he describes: those scenes, rude and humble as they are, have kindled beautiful emotions in his soul, noble thoughts, and definite resolves; and he speaks forth what is in him, not from any outward call of vanity or interest, but because his heart is too full to be silent. He speaks it too with such melody and modulation as he can—in homely rustic jingle—but it is his own, and genuine. This is the grand secret for finding readers, and retaining them: let him who would move and convince others, be first moved and convinced himself."

The Wild Horse of Texas.—We rode through beds of sunflowers, miles in extent, their dark seedy centres and radiating yellow leaves following the sun through the day from east to west, and drooping when the shadows fell over them. These were sometimes beautifully varied with a delicate flower, of an azure tint, yielding no perfume, but forming a pleasant contrast to the bright yellow of the sun-flower. About half-past ten we discerned a creature in motion at an immense distance, and instantly started in pursuit. Fifteen minutes' riding brought us near enough to discover, by its fleetness, that it could not be a buffalo, yet it was too large for an antelope or a deer. On we went, and soon distinguished the erect head, the flowing mane, and the beautiful proportions of the wild horse of the prairie. He saw us, and sped away with an arrowy fleetness till he gained a distant eminence, when he turned to gaze at us, and suffered us to approach within four hundred yards, when he bounded away again in another direction, with a graceful velocity delightful to behold. We paused—for, to pursue him with a view to capture was clearly out of the question. When he discovered we were not following him, he also paused, and now seemed to be inspired with curiosity equal to our own; for, after making a slight turn, he came nearer, until we could distinguish the inquiring expression of his clear, bright eye, and the quick curl of his inflated nostrils. We had no hopes of catching, and did not wish to kill him, but our curiosity led us to approach him slowly. We had not advanced far before he moved away, and, circling round, approached on the other side. It was a beautiful animal —a sorrel, with jet black mane and tail. As he moved, we could see the muscles quiver in his glossy limbs; and when, half playfully, and half in fright, he tossed his flowing mane in the air, and flourished his long silky tail, our admiration knew no bounds, and we longed—hopelessly, vexatiously longed—to possess him. We might have shot him where we stood; but, had we been starving, we could scarcely have done it. He was free, and we loved him for the very possession of that liberty we longed to take from him; but we would not kill him. We fired a rifle over his head; he heard the shot, and the whiz of the ball, and away he went, disappearing in the next hollow, showing himself again as he crossed the distant ridges, still seeming smaller, until he faded away to a speck on the far horizon's verge.—*Kennedy's Texas.*

Dwellings of the Icelanders.—The present houses of the Icelanders differ little from those used by their ancestors who first colonized the island; and, though not according to our ideas of beauty or comfort, are probably the best fitted for the climate. They never exceed one story in height; and, as each room is, in some measure, separate from the others, the buildings on a moderate-sized farm bear some resemblance to a village. The walls are occasionally composed of drift-wood, but oftener of stone or lava, having the interstices stuffed with moss or earth, and are about four feet high by six in thickness. Instead of the usual rafters, the roof often consists of whale ribs, which are more durable, covered with brushwood and turf, producing good grass, which is carefully cut at the proper season. From the door a long passage extends to the *badstofa*, or principal room, the common sitting, eating, and sleeping apartment of the family. From the sides of the lobby, doors lead to other rooms, used by the servants, or for kitchen and dairy. In the better class of houses the walls of the principal chamber are wainscoted, and the windows glazed; but these luxuries are unknown in most, and the holes in the roof that admit the light are covered by a hoop, with the amnion of a sheep or a piece of thin skin stretched over it. They have no chimneys or grate, the smoke escaping by a hole in the roof; and there is no fire, even in the coldest weather, except in the kitchen. The beds are merely open frames filled with sea-weed, feathers, or down, over which is thrown two or three folds of wadmal, and a coverlet of divers colours. From the roof hang various articles of domestic economy; the floor is generally nothing more than the damp earth; and the only seats are the bones of a whale or a horse's skull. To a stranger, however, the filth and smell are the most disagreeable accompaniments of an Icelandic habitation, and contribute not a little to the unhealthiness of the inmates. It is but seldom that the traveller meets a dwelling a little larger, more airy, and better built, belonging to some rich peasant, who tries to combine convenience and neatness with the solid structures of his ancestors.

Hedgehogs.—One of the most interesting facts in the natural history of the hedgehog is that announced in 1831 by M. Lenz, and which is now confirmed by Professor Buckland. This is, that the most violent animal poisons have no effect upon it; a fact which renders it of peculiar value in forests, where it appears to destroy a great number of noxious reptiles. M. Lenz says that he had in his house a female hedgehog, which he kept in a large box, and which soon became very mild and familiar. He often put into the box some adders, which it attacked with avidity, seizing them indifferently by the head, the body, or the tail, and did not appear alarmed or embarrassed when they coiled themselves around its body. On one occasion M. Lenz witnessed a fight between the hedgehog and a viper. When the hedgehog came near and smelled the snake, for with these animals the sense of sight is very obtuse, she seized it by the head, and held it fast between her teeth, but without appearing to do it much harm; for having disengaged its head, it assumed a furious and menacing attitude, and hissing vehemently, inflicted several severe bites on the hedgehog. The little animal, however, did not recoil from the bites of the viper, or indeed seem to care much about them. At last, when the reptile was fatigued by its efforts, she again seized it by the head, which she ground between her teeth, compressing the fangs and glands of poison; and then devouring every part of the body. M. Lenz says that battles of this sort often occurred in the presence of many persons, and sometimes the hedgehog has received eight or ten wounds on the ears, the snout, and even on the tongue, without appearing to experience any of the ordinary symptoms produced by the venom of the viper. Neither herself nor the young which she was then suckling seemed to suffer from it. This observation agrees with that of Pallas, who assures us that the hedgehog can eat about a hundred cantharides, without experiencing any of the effects which this insect taken inwardly produces on men, dogs, and cats. A German physician who made the hedgehog a particular object of study, gave it a strong dose of prussic acid, of arsenic, of opium, and of corrosive sublimate, none of which did it any harm. The hedgehog in its natural state only feeds on pears, apples, and other fruits, when it can get nothing it likes better. Its ordinary food consists of worms, slugs, snails, frogs, adders, and sometimes rats and mice.

Peculiarity in Orange-Trees.—Many of the trees in one garden were a hundred years old, still bearing plentifully a highly-prized thin-skinned orange, full of juice, and free from pips. The thinness of the rind of a St. Michael's orange, and its freedom from pips, depend on the age of the tree. The young trees, when in full vigour, bear fruit with a thick pulpy rind and an abundance of seeds; but, as the vigour of the plant declines, the peel becomes thinner, and the seeds gradually diminish in number until they disappear altogether. Thus the oranges that we esteem the most are the produce of aged trees, and those which we consider the least palatable come from plants in full vigour. —*A Winter in the Azores.*



[The Ploughman and Shipman.]

CHAUCER'S PORTRAIT GALLERY.

THE PLOUGHMAN.

This industrious, simple hearted, and good man occupies but a small space in the text: the description is, like himself, simple and unobtrusive. The most interesting feature of his personal history is his connection with the "poure Parson," as that of his moral character is the benefit he appears to have thence derived. He is in spirit, as well as in blood, the Parson's

"brother,
That had ylaid of dung full many a fother,*
A trué swinker†, and a good was he;
Living in peace and perfect charity.
God loved he best, with alle his heart
At alle times, were it gain or smart,
And then his neighebour right as himselve.
He woulde thresh, and thereto dyke and delve,
For Christes sake, for every poure wight
Withouten hire, if it lay in his might.
His tithes payed he full fair and well,
Both of his proper swink‡ and his cattél.
In a tabárd he rode upon a mare."

The use of the word tabard, we may observe by the way, for a kind of sleeveless coat, or in short a smock-frock, is curious. Of the state of the class represented among the pilgrims by the Ploughman, during the middle ages, we possess but meagre information. It is evident from the text, that he is not a mere ploughman in the sense we now attach to the words, but a man who has "cattle," and from whom "tithe" is expected. He was most probably one of that large class of emancipated villains, who lived by renting a small piece of land, and eking out its produce by occasional labour for other and wealthier men. The rental of land at or about the period of Chaucer presents some curious features as to the prices and quantities of land concerned. We extract a few particulars from Sir John Cullum's 'History of Hawsted.' One rental in 1420 mentions eight acres of arable land let at 6*d.* an acre; another in 1421, thirty eight acres at 9*d.* an acre; and a garden at the old rent of 10*s.* a year. From the same work we obtain an idea of the extent and nature of the produce of a piece of arable land in the manor of Hawsted, consisting of 157½ acres. This was cultivated in the proportion of fifty-seven acres of wheat and fifty four and a half of oats, to twenty-four of barley and twenty-two of peas. The produce averaged somewhat less than eight bushels per acre. As to other matters, the land lying nearest to inhabited places was the best cultivated; the common pastures served as support for the 'cattle,' and the acorns and beech-mast of the woods for the hogs; whilst for their own living the labouring population relied little on luxuries and much on appetite, which no doubt was sufficiently sharpened by the continual labour they had to perform. During harvest, herrings, beer, and bread made of rye, barley, peas, and occasionally of beans,

* Or load. † Worker or labourer.
‡ That is to say, of the fruits of his *labour* as well as of his *cattle*.

formed the chief part of the provisions that graced the husbandman's table. Messes of pottage and cheese also were not wanting. In ancient valuations, both in towns and in rural-districts, we find mention made of stores of corn possessed by the inhabitants. It was the neglect of this precaution, generally carried into effect immediately after harvest, and the consequent improvidence that ensued, that often produced famines. When wheat was sold at such low prices as to be within the reach of the poor, it was thought a great thing. This of course was only the case immediately after a very favourable harvest. In 'Piers Plowman' is recorded an instance of this kind, when even no beggar would "eat bread that in it beanes were." Implements at this period were simple, few in number, and inexpensive, for the user generally made them himself: an iron ploughshare, an axe, and a spade formed the only articles which he was accustomed to purchase. The plough was drawn by oxen, who were so badly fed, that six of them were required for that purpose, and, after all, scarce half an acre was turned up as the result of a day's work. Such were some of the difficulties of husbandry in the older time: and to these circumstances we probably owe not only the simplicity, but the little prominence given by Chaucer to his Ploughman.

BLACK-LEAD AND BLACK-LEAD PENCILS.

A Black-lead pencil is one of that numerous class of familiar implements, the use of which is much better known than the manufacture, or even the materials.

Plumbago, the substance which we improperly call black-lead, is a carburet of iron, that is, a compound of carbon and iron, and is found in various situations, such as in the midst of mountains, in beds of quartz, and in masses of calcareous earth. It generally occurs in kidney-form pieces, varying in size from that of a pea upwards. When pure, a piece weighing ten ounces will contain about nine ounces of carbon and one ounce of iron: hence arises an incombustible character which admirably adapts this substance as a material for crucibles, in the making of which it is much employed. A mine of black-lead was discovered some years ago in North Carolina, in which the mineral occurred in large solid lumps, which were collected, packed in the native state in barrels, and sold at eighteen or twenty shillings per cwt. It was used by the Americans in various forms; being ground with oil for painting the wooden roofs of their buildings, and being used in different ways as a preservative from decay, and also from fire, to which its incombustible character well fits it. Black-lead has been discovered at a considerable depth in one of the mountains of Ceylon; and more recently, a mine of the same substance has been discovered in Ayrshire in Scotland.

But by far the most celebrated black-lead mine is that in Borrowdale, Cumberland, six miles from Keswick. During the reign of Queen Elizabeth, while some copper and lead mines were being worked in this district, the black-lead mine was accidentally discovered, by a disrupture occasioned by a hurricane. When the commercial value of this newly found substance became known, the proprietors found it very difficult to guard the mine from depredations; the practice of robbing it having at length become so common, that several persons living in the neighbourhood were said to have made large fortunes by secreting and selling the mineral. About a century ago, a body of miners broke into the mine by main force, and held possession of it for a considerable time, during which they abstracted an enormous quantity of the mineral, which they sold at a price so low, that the proprietor was induced to buy it up, in order to restore the old rate of prices.

These circumstances gave rise to such jealous caution on the part of the proprietors, that scarcely anything was known of the nature or mode of working the mine, until a few years ago, when Mr. Parkes, the chemist, having an opportunity to visit it during one of its periods of working, gave a minute account of the whole, from which we will borrow a few particulars.

The road from Keswick to the mine leads through some defiles which must be traversed either on foot or horseback, as no carriage can pass. The mine is in the midst of a mountain about two thousand feet high, which rises at an angle of about 45°; and as that part of the mine which is now being worked is near the middle of the mountain, the present entrance is about one thousand feet from the summit. The aperture by which the workmen enter descends by a flight of steps; and in order to guard the treasure contained within, the proprietors have erected a strong brick building of four rooms, one of which is immediately over the entrance into the mine. This opening is secured by a trap-door, and the room connected with it is called the dressing-room; for, when the men enter it, they strip off their usual clothes, and put on dresses suitable for mining. The men work in gangs, which relieve each other every six hours: and when the hour of relief comes, a steward or foreman attends in the dressing-room to see the men change their dress as they come up one by one out of the mine. The clothes are examined by the steward, to see that no black-lead is concealed in them; and when the men have dressed, they leave the mine, making room for another gang, who change their clothes, enter the mine, and are fastened in for six hours. In one of the four rooms of which the house consists there is a kind of counter or strong table, at which two men are employed in assorting and dressing the mineral. This is necessary, because it is usually divided into two qualities; the finest of which have generally pieces of iron-ore or other impurity attached to them, which must be dressed off. These men, who are strictly watched while at work, put the dressed black-lead into casks holding about one cwt. each, in which state it leaves the mine. The casks are conveyed down the side of the mountain in the following manner:—Each cask is fixed upon a light sledge with two wheels, and a man, who is well used to the precipitous path, walks down in front of the sledge, taking care that it does not acquire too great a momentum, and thus overpower him. When the cask has been thus guided safely to the bottom, the man carries the sledge up hill upon his shoulders, and prepares for another cask.

About the middle of the last century, the mine was opened only once in seven years; and a quantity, supposed to be equal to the demand for that space of time, was taken out at once. Subsequently, however, the demand being greater, and the quantity obtainable at any one time being smaller, it was found necessary to work the mine for six or seven weeks every year. During the time of working, the mine is guarded night and day; and when a quantity sufficient for one year has been taken out, the mine is secured thus:—There is, besides the opening at which the men enter, a large horizontal one capable of admitting hand-carts and wheelbarrows for the removal of the rubbish and loose earth with which the black-lead is enveloped, and for the flow of water from the mine. All this rubbish is, at the completion of the working, wheeled back into the larger entrance, to the extent of several hundred cartloads, by which the water is dammed up, and the mine gradually flooded. All the doors are then locked, and the mine entirely deserted till the following year.

Several shafts have been worked in the mine, ac-

cording to the richness of the contents at any particular spot, and the expense of collection varies with the position of the shaft. But the outlay, from the following remark of Mr. Parkes, appears to be by no means heavy:—"The expenses in driving the level, building the house, and working the mine, from the 23rd of April, 1798, to the 4th of April, 1814, have amounted to 6637*l.* 9*s.* 4*d.*; and during this period there have been produced 736 casks of fine black lead, and 1816 casks of the coarse kind, amounting together to 2552 casks, of about 112 lbs. each." The commercial transactions by which the black-lead passes into the hands of the pencil-makers, were thus described by Dr. Faraday, in one of his lectures a few years ago:—The mineral is exposed to sale at the black-lead market, which is held on the first Monday of every month at a house in Essex Street, Strand. The buyers, who amount to about seven or eight, examine every piece with a sharp instrument to ascertain its hardness; those which are too soft being rejected. The individual who has the first choice pays 45*s.* per pound: the others 30*s.* But as there is no addition made to the first quantity in the market, during the course of the year, the residual portions are examined over and over again, until they are exhausted. The average annual sale is said now to amount to about 3000*l.* per annum; but Mr. Parkes states that it was at one time as much as thirty or forty thousand pounds.

At what time the making of pencils from black-lead was first adopted is not clearly known; the first mention with which we are acquainted is in Sir John Pettus's 'Fleta Minor,' published in 1686: where, in speaking of black lead, he says:—"Of late it is curiously formed into cases of deal or cedar, and so sold as dry pencils, something more useful than pen and ink." The mode of manufacture is simply as follows:—The cedar of which the cases are formed is sawed into long planks, and subsequently into smaller rods. Grooves are then cut out by means of a fly-wheel, of such a size as to receive the layer of black-lead. The pieces of the mineral are cut into thin slabs, and then into rods the same size as the grooves, into which they are inserted. The two halves of the case are then glued together, and the whole is turned into a cylindrical form by means of a gauge.

Dr. Ure has described the mode of making pencils in Paris, in which the marking ingredient has any desired degree of hardness given to it. Black-lead, being reduced to a fine powder, is mixed with very pure clay, also in the form of powder, then put into a crucible, and calcined at a heat approaching to whiteness. The proportion of clay employed is greater as the pencil is required to be harder: the average being equal parts of each ingredient. The ingredients are ground with a muller on a porphyry slab, and subsequently made into balls, which are preserved in a moist atmosphere in the form of paste. To give a pencil form to this paste, it is pressed into grooves cut in a smooth board, and another board, previously greased, is pressed down firmly upon them. When the paste has had time to dry, the mould or grooved board is put into a moderately heated oven, by which the paste now in the form of square pencils, shrinks sufficiently to fall easily out of the grooves. In order to give solidity to the pencils, they are set upright in a crucible till it is filled with them, and then surrounded with charcoal powder, fine sand, or sifted ashes. The crucible, being covered, is exposed to a degree of heat proportionate to the hardness required in the pencils, the harder pencils requiring the higher degree of heat. Some of the pencils are shaped in a curious manner: models of the pencils, made of iron, are stuck upright upon an iron tray, having edges raised as high as the intended length of the pencils, and a metallic alloy, made of tin, lead, antimony, and bismuth, is poured into the sheet-iron tray. When the alloy has cooled, it is inverted and shaken off from the model-rods, so as to form a mass of metal perforated throughout with tubular cavities corresponding to the intended pencil-pieces. The pencil-paste is introduced by pressure into these cavities: and when nearly dry, the pieces shrink sufficiently to be easily removed from the cavities. It will be observed that the French pencils here spoken of are unprovided with wooden cases. Messrs. Couté and Humblot are said to have realized large fortunes by the manufacture and sale of these pencils.

Within the last few years black-lead has been used in a singular form as a material for pencils, viz. in the 'ever pointed' pencil-case. This peculiar little instrument, patented by Mr. Mordan about twenty years ago, is a pencil-case provided with a slider, acted on by a screw for the purpose of projecting forward a little cylinder of black-lead. This cylinder is so small that the lead needs not cutting for the ordinary purposes of a pocket-pencil. The mineral is formed into these cylindrical rods by being first cut into thin slabs, then into square rods, and finally passed through holes in a steel plate armed with rubies for the sake of hardness. The first of these holes is octagonal by which the four-sided rod of mineral is converted into one of eight sides; the other two holes are for giving a cylindrical form to the pencil.

DOMESTIC WATER-FOWL.

(Concluded from page 387.)

In North America the Canada goose (*Anser Canadensis*) is very common in a state of domestication, and abundant as a wild bird, breeding in the arctic regions, and spreading southwards on the approach of winter. It is now to be classed among our domestic water-fowl but is kept rather as an ornament to ponds and sheets of water than for the sake of its flesh. In America, however, the farmers regard it as nearly as good and profitable as the common domestic kind.

The Chinese goose (*Anser Cygnoïdes*) is more common in our country as a domestic bird than the Canada goose, and intermingles with the ordinary grey goose, which it exceeds in size, and especially in the swan-like length of the neck. It is a native of China and other parts of Asia and is also said to occur in Africa. Buffon describes it as the "*Oie de Guinée.*"

The common domestic duck, so much in request for the table is descended from the wild duck, or mallard (*Anas Boschas*), one of the most beautiful of the tribe. The tame drake indeed often displays exquisite tints of glossy blue and green, and pencillings of the most delicate character; but great variation obtains, and we find individuals of a pure black, or a pure white, with every diversity between them.

The wild duck is spread over most of the temperate and colder regions of the globe, and is indigenous in England, although far less plentiful than formerly. In winter its numbers are increased by accessions from the colder regions, but these depart early in spring. The tame duck is polygamous, but the wild duck pairs, the pairing season being towards the end of February or very early in March. The female incubates in April or May; and at this juncture the male deserts her leaving to her the care of the forthcoming brood. The males now associate in small flocks, and lose their brilliant plumes and curled up tail-feathers, and nearly resemble the female. With the autumnal moult they regain their distinctive colouring. The flesh of the wild duck is very excellent, and several modes have been resorted to for the capture of these birds in various countries. Of these the decoy is the most successful; and it is recorded that in one season near Wainfleet, thirty-one thousand two hundred wild fowl

were taken in ten of these decoys, of which two-thirds were mallards. On the subject of capturing these birds we shall say nothing, as the reader will find ample details in the 'Penny Magazine' for 1837, pp. 49 and 60.

In China the eggs of the tame duck are hatched by artificial incubation, as those of the fowl in Egypt.

The tame duck intermingles with a curious species often seen in farm-yards, termed the Muscovy, or more properly the musk duck (*Anas moschata*), of which little or nothing seems to be known. This duck exceeds the ordinary kind in size, and differs greatly in colouring, and the form of the head and body. The male is much larger than the female. The general colour is glossy blue-black, varied more or less with white; the head is crested, and a scarlet fleshy space surrounds the eye, continued from scarlet caruncles or wattles on the beak. The feathers are larger, softer, and more lax than in the ordinary duck, and less adapted for aquatic habits.

Buffon terms this bird Le Canard Musqué, on account of its strong musk-like scent; and Ray says the same thing: "Anglicè, the Muscovy duck, not because it is brought from Muscovy, but because it exhales a somewhat powerful odour of musk." Buffon describes and figures it of a blue-black, with white shoulders, and this figure agrees with Marcgrave's description, who states it to be a native of Brazil and Guiana, and terms it 'Anas sylvestris, magnitudine anseris,' a wood-duck, as large as a goose. According to Buffon, it is the Ypeca-guacu of Pison. In Guiana it is said to tenant the flooded savannahs, and to build its nest upon the trunks of decayed trees. When the young are hatched, the parent is said to take them one after another in her beak and put them on the water. It would appear that they are there liable to destruction from alligators, for flocks of young are seldom seen exceeding five or six, though the eggs are more numerous. Their food in the savannahs consists of the grain of a sort of grass called wild rice. In the morning they visit the immense inundated prairies, and fly towards the sea, as the evening comes on, but the hottest hours of the day are passed on the leafy branches of trees. They are fierce and wild, and will not allow themselves to be approached. (See Buffon.) We know nothing respecting the domestication of this bird, nor the precise time of its introduction to Europe. Linnæus, in the 'Fauna Suecica,' says, "In prædiis magnatum culta, nullibi Sueciæ spontanea,"—it is reared on the farms of the gentry, but is not indigenous in Sweden. Buffon says that these birds appeared in France in the time of Belon (about 1540), who calls them "Canes de Guinée." In the time of Ray they were known in England; he terms the species "Anas sylvestris Braziliensis."

Mr. Eyton, in his work on the duck tribe, states that these birds "are supposed to have been originally natives of South America;" but he does not assert this as a positive fact; and it is strange that no wild specimens appear to have been received from that country, as might be expected. The truth is, that considerable obscurity still envelopes the history of this bird. The musk duck has a fierce expression, and is indeed by no means gentle,—being quarrelsome and easily excited to rage, when it depresses its head, and utters deep hoarse notes in the lowest tone. Its flesh is said to be good, as is that of the mixed breed between this and the common kind

Among the wild water-fowl of our country, the teal (*Querquedula Crecca*) is celebrated for the goodness of its flesh. It is one of the smallest, and at the same time one of the most beautiful of our ducks, and might be easily domesticated, as it bears confinement well, and becomes very familiar. This species is distributed over a great part of Europe, Northern Asia, and America; and multitudes every winter visit the fens of our island. It breeds also with us in the marshes of the northern counties, but not in great numbers. The teal, however, is less abundant in our island in winter than the wigeon (*Mareca Penelope*, Selby). This bird, though it does not breed on our shores, flocks to them during the colder months, and takes up its abode on rivers, fens, and lakes, as well as along the whole circuit of our coast. Vast numbers are annually killed, yet the losses seem to be annually recruited, for we observe no diminution of numbers. During the early part of the winter the flesh of these birds is good; but it is said to become inferior after Christmas, owing to the failure of fresh vegetable food, which necessitates them to devour marine vegetables, and perhaps molluscs and crustacea—at least such is Mr. Selby's opinion. The wigeon appears in our latitudes at the latter part of September, and returns northward to its summer haunts early in March. In their habits they are greatly nocturnal, night being the time in which they seek their food; and their whistling note, as they fly in compact bodies overhead, may be heard by the wanderer along the shore after sunset. From this note the wigeon is often called the Whew-duck. This species is easily domesticated, and has been known to pair with the common duck.

Our plate represents the tame swan; the domestic goose; the musk or Muscovy duck, male; the tame duck, male; the wild duck, male; the wigeon, male and female; and the teal, male.

The Stature and Weight of Man at Different Ages.—M. Quetelet, of Brussels, who lately has published the result of his investigations on this subject, found for 63 male children, and 56 female, newly born, the following quantities:—

	Weight. lbs avoird	Stature. Imp. feet.
Male children . . .	7·057536 . .	1·62732
Female . . .	6·4179168 . .	1·58467

The extremes are—

	Boys.	Girls.
Minimum . . .	5·1608262 lbs. .	2·4701367 lbs.
Maximum . . .	9·92166 . .	9·936329

From a table which M. Quetelet has drawn up on the same subject, we find—1st, that at an equality of age the male is generally heavier than the female. 2dly, That the male attains the maximum weight about the age of forty years, and that he begins to lose weight in a very sensible manner towards his sixtieth year; and that at the age of eighty years he has lost about 13·23288 lbs. avoirdupois, the stature being also diminished 2·75604 inches. 3rdly, That the female attains the maximum weight later than the male—towards the fiftieth year. 4thly, That when the male and female have assumed their complete development, they weigh almost exactly twenty times as much as at the moment of their birth, while their stature is only three and a quarter times what it was at the same period. Children lose weight during the first three days after their birth; at the age of a week they begin sensibly to increase; after one year they have tripled their weight; then they require six years to double the weight of one year, and thirteen to quadruple it. The inferior parts of the body are developed more than the superior. In a child the head is equal to a fifth part, and in a full-grown man to an eighth of the whole height of the individual. The mean stature is a little more among persons in easy circumstances than among the indigent population.—*Jamieson's Philosophical Journal.*

Gratuitous Exhibitions.—In accordance with the suggestions of a parliamentary committee, the dean and chapter of Durham have thrown the cathedral (with the exception of the Chapel of Nine Altars) open to the public, for the purpose of enabling them to view the building, monuments, &c.



[Workhouse of the Windsor Union.]

TWO HOURS AT A UNION WORKHOUSE.

The name which some persons have attempted to fix upon the Workhouses of the Unions formed under the New Poor-Law is *Bastile*. The Bastile, as our readers know, was the state prison of Paris. It consisted of eight towers, united by masonry of great thickness. This building was surrounded with a fosse, or ditch, one hundred and twenty feet wide, and twenty-five feet deep; and beyond the ditch was a stone wall, thirty-six feet high. The eight towers contained several stories of octagonal rooms, each having a loopholed window, unglazed, pierced through a wall six feet thick. There was no chimney or fireplace in the rooms; and the only furniture was an iron grating, raised about six inches above the floor, on which the mattress of the prisoner was placed; and on this grating he slept by night and sat by day. The Union Bastiles are somewhat differently constructed. The engraving at the head of this paper is an accurate representation of the Workhouse erected for the Windsor Union. It is situated in the parish of Old Windsor, on the verge of the Great Park, at a spot known as Bear's Rails. The road which passes it leads to Bishopgate and Englefield Green, where the stranger finds himself amongst the beautiful scenery with which the neighbourhood of Windsor abounds, particularly in this locality, which is the scene of Denham's celebrated poem of 'Cooper's Hill.' The Union Workhouse harmonizes with the cheerful peeps over the valley of the Thames, and the massive and venerable trees which form the charm of these woodland solitudes. It is built in the style of two centuries and a half ago, when comfort and elegance, the growth of security, had displaced the rude fortress-mansions of the feudal lords. The area which surrounds it is separated from the public road only by light palings. The court before the central building is bright with flowers and green turf: and the well-directed industry of the inmates is rapidly converting two large plots of waste land, above and below the building, into profitable kitchen-gardens. But let us enter

At the central door we are met by a porter, who communicates to the master of the workhouse our wish to see the building. We are shown into a neat room (that on the right of the door): the opposite room is the master's office. The inmates have recently dined. We taste the food which has constituted their meal; and we acknowledge that the suet pudding, the bread, and the cheese are, in quality, equal to what may be found in the larders of the wealthiest. But then, the quantity? How many poor children get up hungry from this scanty meal? How many aged persons want some comforts besides soup, and gruel, and pudding, and boiled beef? We have been taught, very industriously, to think that there is a pinching dietary in these workhouses: and though the food is unquestionably good, is there enough of it? Such thoughts must cross the mind of the stranger who has heard of anti-poor-law orators and writers. The sight of this building has dispelled some of his prejudices; and he can no longer begin his apostrophe to the miseries of a Union Workhouse with Eloise's lamentation,

"Relentless walls! whose *darksome* round contains,"

&c. &c. But there may still be a great deal of misery though the rooms are cheerful, light, airy, clean even to a Dutch housewife's cleanliness. Let us proceed. The men's dining-rooms on the left of the centre are empty. We go onward to their sitting-rooms, which communicate with yards or courts, in front and behind. The men are separated into two classes—the able-bodied, and the aged and infirm; and each have their allotted stations. The old and infirm are quietly sitting after their meal,—some in the bright sunshine, some in their ward. A few are reading. The able bodied (at this season a small number) have gone to their allotted work, either in the garden, or in picking oakum, or in cleaving wood, or, if they practise any trade of general utility, such as that of the tailor or shoemaker, in labouring for the common benefit. The boys are with the schoolmaster. We see here a healthy set of lads, well clothed, perfectly clean, with smiling and assured faces, learning to read, to write, to cipher, under the direction of an intelligent young man, who looks, in the performance of his duty, as active and cheerful as the boys themselves. We proceed up

stairs to the sleeping-rooms. The whole upper range of the building, which is about three hundred and sixty feet long, is a series of rooms, accessible by several staircases, but communicating, in their entire length, with the master's and matron's apartments in the centre. These rooms, as the lower rooms, are subdivided into the bed-rooms of the able-bodied men, the aged, the infirm, and the boys. On the opposite side of the central building are the sleeping-rooms of the aged and infirm women, the able-bodied, and the girls. Throughout the entire range each has a separate bed; and in looking at these beds (and we were invited to a careful examination of them), it is impossible to doubt that the most vigilant cleanliness presides over the establishment. The ventilation of these sleeping-rooms is perfect. Upon descending into the ground-floor on the right of the centre, we are in the female day-apartments. These are upon the same plan as those of the males. The old women who are not infirm are comfortably seated at their knitting and sewing; some are reading the Book of Life,—that best consolation under every condition; some are walking in their sunny court, and perhaps the thought of their *tea* (for they have tea) is a pleasant anticipation. The girls are with the schoolmistress. They are learning to knit, to sew, to read, and to write. All can *now* write. A year ago, when the Union was first opened, scarcely any could write. An intelligent girl or boy, who desires to know something more than is to be found in the school-books, may have a book out of the library, and so may the adults.

We have seen, nothing yet of actual misery; we have scarcely observed a face in which there is a lurking discontent. The food, though not luxurious or improvidently distributed, must be abundant; for we have beheld nothing but health. We know that health is dependent upon cleanliness, ventilation, and sufficient food. Here are undoubtedly cleanliness and ventilation; and the food must be ample for the purposes of health, or there would be sickness. But there is an infirmary to be seen. Here, indeed, there is some wretchedness, but it is that suffering which we find in the wards of a well-conducted hospital. The sufferer has come here for relief. Here is the paralytic, whose continued abiding amongst us must be rendered as little burdensome as may be; here is the cripple, who is incapable of labour or of exercise, and his pains must be soothed under the eye of surgical skill: here is one who lost the use of his limbs in the last hard winter, and he is fast recovering his strength and his ability to work. The patients tell us that every comfort which they require is within their reach; that every nourishment or even indulgence which they want is instantly given, upon the order of the medical officer. We are satisfied that the sick are well cared for. The kitchen, the laundry, and the chapel complete the inspection of the building.

Is the Workhouse of a Union, then, in which the physical condition of the poor is so much better looked after than in their own dwellings, a place which the poor will desire to pass their days in? Assuredly not. If it were so, it would be a greater curse to the community than the filth, the ignorance, the vice, the suffering of the old parochial workhouses, where the only thing which the parish officers required was that the poor should be fed. To the able-bodied the most comfortable Union Workhouse must be an irksome place. Its strict classification, its regulated supply of food, its unvarying uniformity of discipline, its enforcement of labour, its seclusion from the rest of the world, must offer restraints which few would encounter who have the means of earning their own living. The dirty vagabond who occasionally demands the shelter and food which are offered to all, even to the non-parochial wayfarer, likes not the cleanliness and order which must accompany the satisfaction of his physical necessities. He abides not here. But to the worn-out solitary man, and the sick,—the orphan, and widow, the Union Workhouse must be an incalculable blessing. The education of the children of these *Bastiles* will raise the standard of intellect and morals in the whole community. Such workhouses as we have thus hastily noticed must realize the true object of such institutions —"not to repel the really destitute, nor to attract those who have any other lawful means of procuring subsistence."

THE ISLANDS OF ENGLAND.

UNDER this head it is intended to include only the *islands* and *islets*, great and small, situated in the seas and channels within the southern division of Great Britain, or England. The numerous islands belonging to the northern section of Great Britain, or Scotland, would require a separate article.

Beginning, therefore, on the western side of England, and in the waters that lie to the south of Scotland, and called the Irish Sea, the ISLE OF MAN is the first that presents itself, and which is the largest of the islands of England (with the exception, perhaps, of Anglesea, or Anglesey), and the most remarkable for its historical facts and relations. Its extreme length is about thirty miles, with an irregular breadth, varying from six to twelve or thirteen; its length extending in a northerly and southerly direction, with the northern part inclining towards the east. Its position is due west from the southern part of Cumberland and the northern extremity of Lancashire, the distance from the island to the nearest part of the English coast being from thirty to thirty-five miles. It is also about the like distance from Galloway, in the south of Scotland; and the same from Anglesea, in North Wales. From Ireland the distance is somewhat greater, being more than forty miles from the nearest point of the Irish coast. It is stated by some of the old historians that the Irish on one occasion put in a claim for this island, on the plea that it lay as near to their country as it did to either of the other rival nations, England and Scotland; when a rather singular mode of settling the dispute was had recourse to—not that of measuring the distance, as would have been the case now-a-days—but by introducing venomous reptiles into the island, and as they were found to thrive and propagate their species, the Irish people were satisfied to forego their claim, believing it to lie beyond the limits of the influence of their country's patron and guardian, St. Patrick.

The earliest mention made of this island is found in Cæsar's 'Commentaries,' where it is called Mona, which name has also been applied to the island of Anglesea by some of the ancient writers. About the close of the first century, when the ancient Druids were expelled from North Wales, they took shelter in the northern part of this island, and soon found means to bring the inhabitants under a mild form of government which they instituted along with their superstitions and religious ceremonies. In the fifth century the Scots transported themselves thither, and for a considerable period afterwards the princes of the island appear to have been of the same line as the kings of Scotland. It was afterwards ravaged by Edwin, king of Northumberland, when there sprang up a second race of princes, said to be descended from Orri, the son of the king of Norway.

Subsequently the princes or governors of the Isle of Man were called kings; and a line of these is said to have sprung from Goddard Crownan, son of Harold the Black, of Iceland, who took shelter here after Harold had defeated the Norwegians at Stamford. But these kings were feudatories, in some degree, to the kings

of England. But Alexander III. of Scotland, who had conquered the isles, seized this also; when it afterwards came into the hands of Edward I., who directed the warden to restore it to John Baliol, who had previously done homage to him for the kingdom of Scotland. It afterwards was claimed in descent, and finally was adjudged by parliament, in the 7th of Edward III., to William de Montacute, and conveyed to him by letters-patent in the same year. It afterwards, by sale or forfeiture, changed hands several times, and was held by the Stanley family, of which the Earls of Derby became the head, till the reign of Elizabeth; and it finally came into the possession of the Duke of Athol. It was purchased of the Athol family by government, in 1764, for 70,000*l.*; but in 1792, on its being made apparent that it had been disposed of beneath its real value, an additional compensation of 3000*l.* per annum was granted by the crown to the duke's family for ever. The manorial rights, and certain privileges and immunities, still continue in the Athol family.

The inhabitants of this island are still on a different footing from the rest of the subjects of Great Britain and her islands (except the Channel Islands): for instead of being represented in the British parliament, they have a governor and council who superintend public affairs, and twenty-four persons who form what is called a *House of Keys*, who were originally the representatives of the people, but at present a permanent and self-constituted body. These, together with two officials called *deemsters*—the judges of the north and south districts respectively, who decide causes as they *deem* conscientiously right—form what is called the *Tinwald* Court, so named from the Islandic *ting*, an assembly, and *wald*, a fence. This court meets annually in the open air, on Tinwald Hill, three miles from Peel, on the road to Douglas. It is at the meetings of this court that all new laws, or Acts of Tinwald, are promulgated.

The deemsters are judges both in civil and criminal cases: and, until lately, barristers and attorneys were wholly unknown, every one pleading his own cause. The civil divisions of the island consist of six *sheadings*, each having a*n* *crone*, or coroner whose duties are similar to those of Sheriffs; besides which there are as many *moars* and *captains* as there are parishes, the former superintending the revenue, while the latter act as captains of militia. The ecclesiastical divisions extend to seventeen parishes.

Viewed from a distance, the general aspect is tame and uninviting: for the mountains, which extend nearly through the entire length of this island, although of a considerable altitude, neither tower up with sufficient abruptness nor assume picturesque forms. The highest point of the range is Snowfield, which is nearly two thousand feet above the sea; and the extremities of this range, the Barrules, are scarcely a couple of hundred feet lower. Under Snowfield, Barrule, and Carrahan, three mighty kings of the island are said to lie buried, who gave their names to these mountains; and so vain and superstitious are the natives, that they still are willing to believe that these huge natural piles are artificial barrows raised in honour of their memories.

This range of mountains and hills occupies a considerable portion of the superficial area of the island, and no doubt affects the climate unfavourably. However, from their sides and bases issue many springs and rivulets which afford a supply of fresh water in every part of the island. Some of the larger streams are stocked with trout and other species of fresh-water fish. The names of the principal are the Neb at Peel, the Colby near Ramsey, and the Black and Grey Waters near Douglas. The valleys are some of them tolerably fertile in grass and pasture; and where the land is tolerably level, grain is frequently cultivated. The northern district of the island is not so fertile as the southern; but there is more timber there, for the soil is of a sandy character, and consequently suited to the growth of the fir-tree. On some of the uplands there is an abundance of peat-soil, which the inhabitants dig for fuel; and it is no unusual thing to discover beneath two or three feet of this peat, larger trees, both fir and oak, than are now growing in the island.

Lead, copper, and iron are among the mineral productions; besides which there is no scarcity of stone of several sorts, including limestone and blue roofing-slate; marl is likewise met with. The cattle of the island are small, chiefly of the Kyloe or Galloway breeds, and the sheep which are pastured upon the hills are of the small coarse-woolled breed, with black or grey faces. The horses are small, but they are remarkably hardy; and there is a breed of small swine in the island, much esteemed for the excellence of their flesh.

The area of the whole island has been estimated at 140,000 acres; with a population exceeding 30,000. The language spoken by the natives is called Manks, or Manx, being a dialect of the Erse: but, from the influx of strangers, it is now dashed with English and other tongues. The people too are called Manx, but they are evidently of a very mixed origin. Many of them engage in the herring fishery, which commences in July and lasts till Allhallows, and 20,000 barrels have been cured and exported in a season, employing 500 boats of two tons burthen each.

Though the bishop takes the title of Sodor and Man, the Hebrides, which formerly were called Sodor (or at least one of the principal of them was so named), have no longer any connection with Man: but the name (Sodor) has been applied in modern times to a small island within musket shot of the main one, which was called by the Norwegians Holm, and upon which the cathedral is situated: but the bishop's residence is in the parish of Kirk Michael. The capital, if it may be so called, is Castle Town, or Rushin, at the head of a bay on the south of the island. The castle is a building of considerable extent, and is the residence of the governor, and is stated to have been built by Gutterd, king of Man, A.D. 960, who was interred within its walls. Derby Haven, the most secure harbour in the island, lies about a mile from Castle Town.

Douglas, on the east coast, although by no means so well built as Rushin, is the chief emporium of trade. Mona Castle, in the neighbourhood of this town, is a seat of the Duke of Athol.

Peel, on the west, is protected by a castle situated upon the rocky island referred to as the site of the cathedral. Ramsey lies on the north of the island, at the head of a spacious bay, and has a harbour secure from every wind but a north-easterly one.

Balla Salla was once distinguished by Rushin Abbey, the burial-place of the kings of Mona, but at present few vestiges of its former grandeur are remaining.

Since the introduction of steam-boats, the Isle of Man has emerged, as it were, from a state of comparative obscurity, and thousands of persons have visited this place who never would have seen it but for the facilities which steam-power has afforded. There is scarcely a day now upon which several steamers do not touch at one or the other ports of this island, for as it lies not far out of the direct route from Liverpool to the south and west of Scotland, as well as the north of Ireland, where great expedition is not a material object the boats commonly touch at this island. Besides these there are several coasting steam-vessels which ply from Port Carlisle, Whitehaven, Lancaster, and other places, which either make occasional excursions to the Isle of Man, or take it in their regular routes as one of the

places to call at; so that its intercourse with the three neighbouring kingdoms is now frequent and regularly established. It is not, however, a place of fashionable resort; for its climate is by no means in its favour, vast quantities of rain falling for seven or eight months of the year, and occasionally it is visited with a long continuance of cold easterly winds; while the society of the island, although much improved from what it was formerly, still continues a sort of city of refuge for decayed debtors and outlawed individuals, who find protection here from the laws of the United Kingdom.

Neither of the Acts of parliament which transferred the island from the Athol family to the crown interferes with private laws and immunities, except as regards the excise and revenue laws, and hence it is that it still continues an asylum for persons of a certain order and character.

WALNEY ISLAND.

Directly eastward from the Isle of Man, though at the distance of more than thirty miles, lies the island of Walney. It is situated on the north of the entrance into Morecambe Bay, and is separated from the mainland by a narrow strait fordable at low-water. The length of this island is nearly ten miles, but it is very narrow, in some places less than half a mile, and rarely extending to a mile. Its soil is sandy, and it lies so low, and so completely exposed to the winds blowing in from the Irish Sea, that the waves sometimes threaten to roll directly over it; and instances are on record of the sea rushing across it in one or two places.

The district of country to which it lies contiguous is that detached portion of Lancashire called Lonsdale north of the Sands; but this particular part of it is known by the name of Low Furness, and is a very fine agricultural district. The island of Walney is, however, comparatively barren; for notwithstanding some of the inhabitants raise more or less grain, the ground generally is mown or pastured, and large numbers of rabbits do not add to its fertility.

On the island are three or four small villages or hamlets, with here and there a small cottage-farmer. A small chapel for the convenience of the inhabitants stands nearly in the middle of the island. The south end of the island, which lies at a greater distance from the mainland, curves inward, something in the shape of the head of a bent walking-cane, and within this curve a harbour is formed where coasting vessels often resort for shelter and safety. Between this part of Walney and the mainland are two or three smaller islands, the largest of which (about a mile long) is called Old Barrow; while another, named Foulney, is somewhat smaller, but, as its name implies, is the resort of vast numbers of wild-fowl. Indeed, all these islands are frequented by large numbers of sea-fowl, particularly gulls of two or three varieties; and the only remarkable object they present at a distance are the old walls of Peel Castle, or, as it is commonly called, the Pile of Fouldry. The building has been based upon an irregular rock, but at present the ruinous walls rise to no great height, although the Pile, or 'The Peel' (as it is called), may be seen from the vicinity of Lancaster on the opposite side of Morecambe Bay, and it serves as a signal-tower by which mariners are guided in this intricate and dangerous channel.

ISLAND OF ANGLESEA, OR ANGLESEY.

This is one of the islands of the Irish Sea, and is the largest of the islands belonging to England. It is one of the six counties of North Wales, being situated at the north-western extremity of that principality. A long and narrow channel separates it from the mainland. By some of the old Roman authors it was named Mona; but the ancient Britons gave it the name of Ynys Dowyll, or Shady Island; the name, no doubt, being derived from the groves and woods with which it once abounded.

The shape of this island is an irregular triangle, indented throughout with bays and creeks. From north-west to south-east its length is twenty miles; and its breadth from north-east to south-west is about sixteen miles, with a superficial area of about two hundred thousand acres. It contains two market-towns, Beaumaris and Holyhead; and although the former is the county town, the latter is far more populous. It is divided into six hundreds, which contain seventy-seven parishes. The population of the whole island does not fall far short of forty thousand. In the island are no streams of any importance to navigation, although it is generally well watered by numerous small brooks and rivulets. The strait which separates it from the mainland in breadth scarcely exceeds a good-sized river, but it serves the purposes of navigation to small vessels connected with the trade of neighbouring seaports. The bridge of Menai, which has been thrown across this strait, is one of the greatest monuments of art connected with modern times; for while it in noway interrupts the navigation of the channel, it forms an easy and safe communication with the mainland, which had long been much needed.

The climate of Anglesea is considerably milder than the adjacent counties of North Wales; but owing to the prevalence of the autumnal fogs, the inhabitants are subject to attacks of agues. Excepting the district of country bordering on the strait, which is still interspersed more or less with woods, the country on the whole presents a naked and uninviting appearance, though in the time of the Druids most of it produced abundance of timber-trees, among which were the "shady oaks" with which the island is said to have once abounded; and among which were erected those rude temples where they practised their peculiar religious rites and ceremonies, until they were eventually driven to seek refuge in the Isle of Man. Though much of the ground presents an uneven surface, there are no hills of much note or of considerable elevation; nothing to be compared with the mountains of the neighbouring counties of Wales.

The soil for the most part is tolerably productive; but farming until within a very recent period made but little progress towards those vast improvements which have been effected in other parts of the country; and even yet the agricultural condition of Anglesea is much behind that of many parts of the country which cannot boast of so good a soil. The greater portion of it is a sandy loam, and the corn produced consists of wheat, oats, and barley, of which a considerable quantity is annually exported to the mainland. The cattle raised here are yearly sent to the English markets in considerable numbers; for although a great number of sheep are kept upon some of the poorer lands of this island, the value of the cattle exported greatly exceeds that of sheep, for it is not from this part of the principality that the noted Welsh mutton is derived. Neither game nor fish (fresh-water) is very plentiful, but the sea yields a good supply of most kinds of fish common to our coasts; and Anglesea is reckoned a cheap place for provisions generally.

The mineral productions of the island are various, and some of them of a valuable nature. There are some marble-quarries that have been worked with success, as well as others which yield breccia for millstones. But the most valuable production of the island is its copper, of which large quantities have at times been raised, some in a native state, but most generally in veins mixed with sundry other matters. Lead too is among the mineral products; and coal, though not of the best quality, is found within the limits of the island

(To be continued.)



[a, Wood-grouse; b, Pheasant; c, Quail; d, Red-legged Partridge; e, Red-grouse; f, Black grouse, g, Ptarmigan; h, Common Partridge.]

ON GALLINACEOUS BIRDS INCLUDED UNDER THE HEAD OF GAME.

Many birds of the gallinaceous order are valuable, and therefore protected by man, though they cannot be said to be reclaimed. These birds, collectively termed '*Game*,' are in our country and some others regarded as the property of the landed proprietor on whose estate they are found; and laws arbitrary and severe, the relics of feudal times, when it was more pardonable for a 'villain' or 'serf' to kill a man than a deer, are still to a certain extent in force. But for some protection, it cannot be doubted that many species would soon become extirpated in our island; and a few perhaps, without incessant care, and a corresponding expense, would from various incidental causes become gradually diminished, and at last be rare in the extreme, if not altogether extinct within the limits of our shores. We here allude more particularly to the Pheasant (*Phasianus Colchis*), which is not an aboriginal of this country, though it has been long naturalized both in this country and in all the adjacent parts of the Continent.

The pheasant is a native of Western Asia, and its

first introduction to Europe appears to have been by the Greeks at an early part of their history. It is not improbable that it was first brought to Greece by the adventurers of the Argonautic expedition under Jason to Colchis, in the year 1263 B.C.; the real object of which appears to have been the establishment of commerce with that country. Colchis was a country bordering the Euxine Sea on the east, and includes the present Georgia, Mingrelia, &c.

Through that country flows the river called Phasis; and from the banks of the Phasis was brought the bird called Φασιανος, or *Phasianus*, so remarkable for its beauty—the Pheasant in our language. Pliny termed these birds *Phasianæ aves;* that is, birds of the river Phasis, thereby indicating their primitive locality. At present the pheasant is found wild in China, and throughout the immense tract of country on the north-west of that empire, now termed Independent Tartary.

Long naturalization in our island gives the pheasant the claim to a place among our British birds; and Selby and Gould have admitted it, though they have excluded the common fowl, the pea-fowl, the guinea-fowl, and the turkey, which on the same grounds ought to be recognised. The pheasant, though it roosts at night on trees, is terrestrial in its habits, resorting to dense underwood, thick brambly copses, and places overgrown with long grasses, tall ferns, and wild raspberries, where it lies concealed during the day. In these 'preserves' it breeds, making a loose nest on the ground.

The male is polygamous, and during the mating season claims to himself the possession of a certain territory or beat, from which he drives off all intruders, giving battle to his rivals who venture within certain limits. At this season, the latter end of March and beginning of April, the *crowing* of the pheasant in token of defiance may be heard: and combats often take place, not only between rival male-pheasants, but between these and the domestic cock of the adjacent farm-yard.

During the winter the males associate together distinct from the females. The latter at first are joined by the young birds of both sexes; but the young males, which acquire at the autumnal moult the full plumage, afterwards leave their society. The feeding-time of the pheasant is early in the morning and late in the evening, just before sunset. The birds at those times quit the thicket or preserve, and hasten to the neighbouring fields; when disturbed they run swiftly along, and only rise if pursued, or when near their wooded retreat. The male, when retiring to his branch to roost, utters a loud chuckle, which too often betrays him to the poacher. Roots and insects constitute the summer fare of the pheasant; bulbous roots, and especially the common tulip-root, are great favourites. And in order to obtain these it digs with its beak and scratches vigorously with its feet. Grain forms its winter diet, and with this the birds in preserves have to be duly supplied.

The plumage of the pheasant is too well known to need description. It may be here observed, however, that there are two varieties, one distinguished by a white ring round the neck. Female birds with the male plumage are not unfrequent; but in these instances the ovaries are always found to be diseased.

Young pheasants are not always easily reared, and are peculiarly liable to the presence of a parasitic worm allied to the fluke (a species of *fasciola*) in the trachea, adhering there by a sucker. The cure recommended is the subjection of the affected birds to the fumes of tobacco; but this must be done very carefully.

The pheasant is a woodland bird, though terrestrial; but the partridge is essentially the tenant of open corn-lands. This well-known species of 'game' is common in the corn counties of our island and on the adjacent Continent, being in fact most abundant where the labours of the ploughman are most extensive.

Except during the breeding season, partridges associate in flocks or 'coveys.' In February the pairing takes place, and the males often fight obstinately with each other. The female lays her eggs at the latter part of May or beginning of June, selecting a shallow excavation under a tuft of herbage for their reception. The male leaves the work of incubation entirely to his mate, but joins her when the brood is hatched, and unites with her in its protection. Few birds are more solicitous in the rearing of their young, and many are the stratagems which the parents will practise to draw off attention from the brood, which by signal-notes is scattered and recalled. "It is not uncommon," says Markwick, in his notes upon White's 'Selborne,' "to see an old partridge feign itself wounded, and run along the ground fluttering and crying before either dog or man, to draw them away from its helpless unfledged young ones. I have often seen it, and once in particular I saw a remarkable instance of solicitude in the old bird to save its brood. As I was hunting with a young pointer, the dog ran on a brood of very small partridges; the old bird cried, fluttered, and ran tumbling along just before the dog's nose, till she had drawn him to a considerable distance, when she took wing and flew still farther off, but not out of the field. On this the dog returned to me, near the place where the young ones lay concealed in the grass. This the old bird no sooner perceived than she flew back again to us, settled just before the dog's nose, and by rolling and tumbling about again drew off his attention from the young, and thus preserved her brood a second time. I have also seen, when a kite has been hovering over a covey of young partridges, the old birds fly up at the bird of prey, screaming and fighting with all their might to preserve their brood."

Selby mentions a well-authenticated instance in which two partridges, in defence of their brood, gave battle to a carrion-crow, and actually held the miscreant till taken from them by the spectator of the scene.

Like the pheasant, the partridge feeds early in the morning and late in the evening—the covey resting during the day among herbage, or basking on dry banks, or, like the fowl, dusting their plumage and cleaning their feathers. At night they generally choose the middle of a large field as their roosting-place, and sit crowded together. The call of the partridge is usually heard before the covey retire to rest; they answer each other, and thus the stragglers are collected. The partridge is greatly esteemed for its flesh. An old distitch says,—

"If partridge had the woodcock's thigh,
'Twould be the best bird ere did fly."

Its colours are well known.

Within the last fifty years a Continental species, termed the Red-legged Partridge (*Perdix rubra*, Briss.), has been introduced into our island, to the disadvantage of the common bird, which it drives from the lands and enclosures where it establishes itself.

The red-legged partridge (a native of France and Southern Europe, and the Isles of Guernsey and Jersey) was first introduced into this country by the Marquis of Hertford and Lord Rendlesham, about the year 1790. They procured the eggs of the species on the Continent, and had them placed under the common hens; the former nobleman, at one of his shooting residences in Suffolk; the latter, at an estate in the same

county. From these two spots the species has gradually extended itself; and in Norfolk, Suffolk, Essex, and the adjacent counties, is now very abundant. The flesh of this bird is much prized by some, being whiter than that of the common partridge; it is, however, inferior in richness of flavour, and is less juicy.

The red-legged partridge considerably exceeds the ordinary species in size, and is a bolder, more alert, and vigorous bird. It is consequently more difficult to bring down with the gun. It not only rises at a distance before the dogs, but after alighting from its sweep runs swiftly for many yards, and that with the head and neck erect, and with eyes attentive to the motions of the dogs and sportsmen. Like our own indigenous species, it frequents corn-lands, and especially somewhat elevated fields. It breeds amidst growing corn or clover, the female making a nest of dried grasses and leaves. The parents are very assiduous in the care of their young, which, like those of the common partridge and fowl, run about as soon as excluded from the egg. During the winter the coveys scatter themselves over fallow-lands and turnip-fields; and in severe weather retire to the shelter of copses, hedgerows, warm banks, and shrubby declivities facing the south. At this time, especially if snow be on the ground, they rise with less alacrity on the approach of the sportsman than in the autumn, and are more easily shot down. The extirpation of this bird is indeed desired by many sportsmen, who are unwilling to see the original partridge cede its native districts to a usurper.

The red-legged partridge is a very elegant bird. The general colour of the upper surface is reddish-brown; of the under, reddish-yellow: the feathers of the sides are ornamented with a series of transverse crescent-shaped bars of black, white, and chestnut; the throat is white, bordered by a deep band of black; the centre of the breast is of a bluish-ash colour, mottled above with black. The bill and legs are red.

[To be continued.]

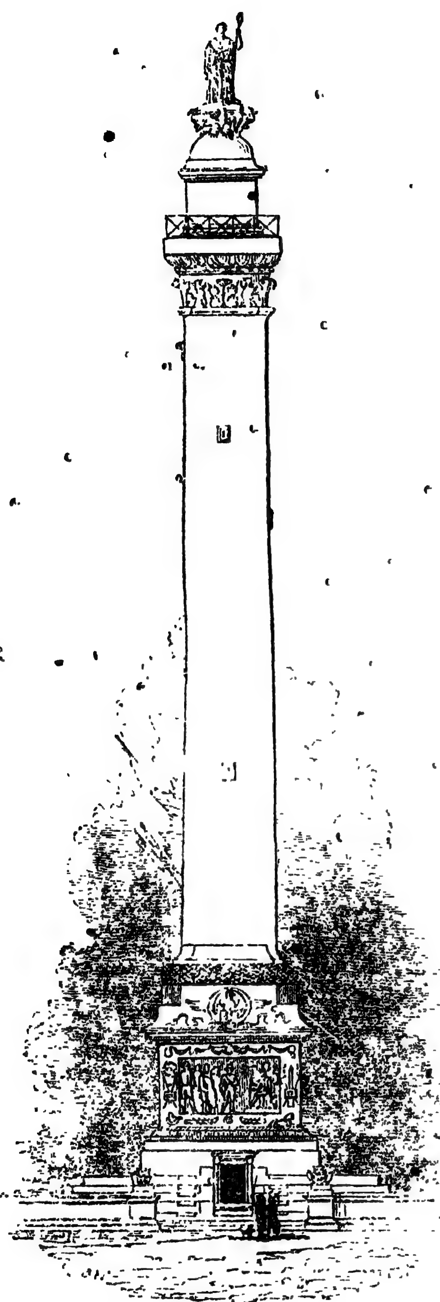
DOMESTIC ECONOMY OF THE ESTHONIANS.

THE following details of the domestic economy of an Esthonian landowner's household at the present day may serve to give our readers an idea of the duties which the good housewife was called upon to perform in England three centuries ago. In a few of the remotest spots in Great Britain *something* like this system of living independent of shops and markets may still in part exist, but the most wealthy find it more convenient to live "from hand to mouth." If the victualling of a man-of-war requires no ordinary exercise of intelligence and foresight, an English housewife of the sixteenth century had almost as great a task to perform, and one which demanded no ordinary share of thoughtfulness, judgment, and experience. What the influence of these manifold and all-engrossing domestic cares may have been upon the character of women in that day, and what influence a release from these duties has had upon those of our own times, is a subject which we have not at present space to discuss.

"After taking a review of the dwelling-rooms and bed-rooms, all spacious and airy, and wanting nought save that most desirable of all bed-room requisites, privacy, my hostess led the way to her *schafferei*, or store-room, and, unlocking the door with a slight solemnity of manner, ushered me into a crowded treasury of household goods. The room was a very warehouse, hung round, fitted up, and strewed about with the numerous items of a housekeeper's economy, to which those who only consume them often attach too little importance, and those who have to provide them too much. Side by side on the floor stood big-bodied bottles of spirit and liqueur, rolls of course linen, jars of pickles and preserves, banks of wool, loaves of sugar, and bundles of flax. In deep chests around was the Moscow flour, salt, sago, saffron, starch, &c. &c., while tiers of drawers displayed large provisions of native dried apples, pears, cherries, peas, beans, birch-twigs, applied as a decoction for wounds—in short, a perfect *hortus siccus* for kitchen use. Around hung balls of twine and yarn, nets, corks, candles of as many colours and sizes as those offered to the Virgin of Casan, tanned sheep-skins, both black and white, and numberless other pendent treasures, while one side was fitted up in numerous partitions, where the raisins, figs, and spices for daintier palates were stored. This *schafferei* is the particular sanctuary of the lady of the house, who, if she do all, has enough business to transact. For the duties of an Esthonian *wirthschaft*, or *menage*, are not confined to ordering dinner or scolding servants, but, like those of our grandmothers a few generations back who directed the weighty concerns of a large country residence, include the weaving of linen, the making of candles, the boiling of soap, brewing of liqueurs, &c.; and, communication with distant towns being necessarily seldom, it requires no small forethought to provide that, during the long months of winter, the family shall never fail in sugar or plums, nor the many hangers-on in the back settlements of the house in the more stable articles of subsistence. It is true every lady has her housekeeper to advertise her that there is no more home-brewed vinegar in the bottle, or home-made starch in the tub, or, if she be unusually wealthy, an extra assistant, emphatically styled a *Mamselle*, on whom all these base cares descend; but housekeepers and mamselles will be human as well as their mistresses, and sometimes all three unite in forgetting some important trifle which equally spoils the dinner and the temper of the *Hausherr* for several days.

"All these grave responsibilities render the post of a baron's lady one, however honourable, but of little rest. The very word *wirthschaft* possesses a talismanic power. By growing girls, who trust ere long to superintend one of their own, it is pronounced with a mixture of reverence and apprehension; by young brides, fresh in office, with a sententious consequence, as the password of their newly-acquired dignity; and by older versed matrons with a glee and evident inward gratulation which makes me suspect they are very glad of so convenient and comprehensive a word to absolve them from all other duties. In its various mysteries and details, however, there is much that is both interesting and instructive; and a clear-headed practical woman, with a solid education, will, by generalizing one department, dispensing with another, and making use of her own sense in intricate cases, strip the term of half its terrors. Education has not hitherto been considered a necessary portion of an Esthonian lady's dowry, and in old times it was thought the greater the simpleton the better the housekeeper; but the progress of enlightenment, and a few solitary intermarriages with women from a more advanced country, have aroused the first suspicion of a fact, not perhaps sufficiently acknowledged anywhere—that educated persons excel in the meanest things, and that refined minds possess the most common sense.—*Letters from the Baltic.*

Gardens of Hindostan.—Among the enjoyments of the upper classes I should not omit their gardens, which, though always formal, are nevertheless often pleasing. They are divided by broad alleys, with long and narrow ponds or canals enclosed with regular stone and stucco work running up the centre, and on each side straight walks between borders of poppies of all colours, or of other flowers in uniform beds or in patterns. Their summer-houses are of white stucco, and, though somewhat less heavy and inelegant than their ordinary dwellings, do not much relieve the formality of the garden; but there is still something rich and oriental in the groves of orange and citron trees, the mixture of dark cypresses with trees covered with flowers or blossoms, the tall and graceful palms, the golden fruits and highly scented flowers. In the heats of summer too the trellised walks, closely covered with vines, and the slender stems and impervious shade of the areca-tree, afford dark and cool retreats from the intolerable glare of the sun, made still more pleasant by the gushing of the little rills that water the garden, and by the profound silence and repose that reign in that overpowering hour. I have great doubts whether the present kind of gardens has not been introduced by the Mussulmans, especially as I remember no description in the poets that are translated which suggests this sort of formality.—*Elphinstone's Hist. of India.*



THE NAPOLEON COLUMN AT BOULOGNE.

The mutability of human affairs is a common-place topic enough, and the history of this column only confirms what is sufficiently proved without it. In 1803 the army and fleet destined by Buonaparte for the invasion of England were assembled in the harbour and on the shore of Boulogne, under the command of Marshal Soult; "and if," says a writer in the *Magasin Pittoresque*, "unforeseen circumstances had not forced him to abandon the intention, our glorious rival had perhaps been struck to the heart, and the political state of the world been totally changed." *If* and *perhaps* are noted peace-makers; and the "unforeseen circumstances" having taken place, instead of invading England, our neighbours resolved to erect a column. "An historical fact of such importance," proceeds the writer, "deserved to be transmitted to posterity by some durable memorial. The national feeling was so unanimous, that, on the 1st Vendemiaire, an XIII.,* the expeditionary army (the fourth corps of *la grande armée*) voted a monument to the honour of Napoleon, its general, who had been proclaimed emperor in the preceding year; and they chose for its site a little hill near their camp, situated about 200 yards west of Boulogne, on the road to Calais. This monument, therefore, is not, like most of those of its kind, ordered by the power and conceived by the ambition of a chief; it owes its existence to the spontaneous enthusiasm of a whole army."

But all this enthusiasm was not sufficient to complete the pillar. the subscriptions came in but languidly, and the work alternately proceeded slowly or stopped altogether. In the following November, Marshal Soult, surrounded by the army, laid the first stone, on which, in French, was the following inscription:—

The first stone
of this Monument, devoted
by the expeditionary army at Boulogne
and the flotilla
to the Emperor Napoleon,
was deposited by Marshal Soult, commander-in-chief,
on the 18 Brumaire, an 13 (9 Novembre, 1804),
the Anniversary of the Regeneration of France.

The base and the shaft of the pillar were at length raised. Some part of the base was of black marble, found in the Boulonnais, and the shaft was of a greyish-yellow marble, capable of receiving a high polish, from the quarries of Marquise, in the vicinity. Beyond this little was done more than recording the "historical facts" of what was intended; and we here again recur to the writer in the *Magasin Pittoresque*. "According to the original design, the base was to have been ornamented on three sides with bas-reliefs: the first, which represented the homage rendered by the army to its chief, was the only one executed, and was destroyed in 1815. Of the other two bas-reliefs, one was to have been a bird's-eye view of the port of Boulogne, the flotilla, and the line of batteries; the second was to have represented the expedition on the English shore; the fourth was to have borne the inscription relative to its erection: the bronze eagle, with its wings displayed, and surrounded by crowns, surmounting the base; with the crowned and robed statue of Napoleon, supported on its tablet by eagles, also in bronze, were never carried further than the design."†

The restoration of the Bourbons occasioned a change in the name and destination of the column. Its completion was strongly urged as a beautiful work of art, and it was even proposed to convert it to the purposes of a lighthouse, but the expense of the latter project prevented its adoption. In 1818 the town of Boulogne petitioned the Chamber of Peers that, "as it was one of the first to witness the return of our beloved monarch to his dominions in 1814, when he was meditating that immortal charter which he projected giving to his people," this column should be dedicated to Louis XVIII., "the restorer of the monarchy and the protector of public liberty;" and in 1819, after other most loyal petitions, of the sincerity of which Louis appears to have entertained many reasonable doubts, orders were given to complete the column to commemorate

* Sept. 22, 1804, the first day of the year, according to the French Republican Calendar.

† It has been said that the column was originally intended to commemorate also the institution of the Legion of Honour, but this was not stated at the time, and appears to have been an after-thought, the first distribution of the decorations of that order having taken place on the 16th of the preceding August.

his "return to his dominions." A hole was now cut in the stone staircase, and a box deposited containing coins of Louis XVIII., crystal portraits of the members of his family, and a bronze plate with a detail of the commencement, progress, and completion of the column. It was then proposed to surmount it with a statue of Louis XVIII. le Desiré, but he had the good sense to decline the doubtful honour; and, after many other proposals, a gilt globe five feet six inches in diameter was determined upon. It was embellished with four fleurs-de-lys, and four others were sculptured at the four angles of the tablet of the capital. Bas-reliefs were ordered to be prepared commemorating the return of the Bourbons, and one of the base was destined to receive the following inscription:—

This Column,
voted by the army assembled at Boulogne,
from whence it threatened England,
was commenced in 1804.
Become a monument of peace by the restoration
of the throne of the Bourbons,
it has been completed under the auspices
of His Majesty Louis XVIII.,
and consecrated to the recollection, always dear to
the French, of his happy return to his dominions
in 1814.

The column had now become the *Colonne des Bourbons*, and was opened to public view on August 24, 1814; but the revolution of July, 1830, restored it, to a considerable extent, to its original purposes: the fleurs-de-lys were knocked away immediately, and stars substituted. Shortly afterwards the French Chambers voted sums for the completion of the design. The execution of the statue of Napoleon was entrusted to Baron Bosio. The emperor is represented in imperial costume; he holds a sceptre in one hand, and in the other the order of the Legion of Honour. The statue is sixteen feet in height, and has a magnificent and impressive appearance, though the imperial robes, by concealing so much of the figure, give it a somewhat heavy effect. The bas-reliefs have been reduced to two; that on the principal face, confided to M. Bra, represents the homage of the army as in the former one that was destroyed; Napoleon is seen sitting on his throne, surrounded by his generals, who present the plan of the column dedicated to him by the army. On the opposite face is represented the distribution of the crosses of the Legion of Honour in August, 1804, by M. Lemaire. The bas-reliefs are in bronze, but the surrounding ornaments are sculptured in the marble like the Egyptian hieroglyphics. The two other faces are occupied with the following inscriptions. On the south side, in French:—

Upon this shore,
on the 16th of August, 1804,
Napoleon, in the presence of the Grand Army,
distributed the decorations of the Legion of Honour
to the soldiers, to the citizen,
who had merited well of their country.

The Fourth Corps, commanded by Marshal Soult,
and the Flotilla, under the orders of Admiral Bruix,
desiring
to perpetuate the memory of this event by a monument,
Louis Philippe I., king of the French,
completed this column,
consecrated
by the Grand Army to Napoleon,
M.DCCC.XLI.

On the north side, in Latin:—

Louis Philippe I.,
King of the French,
On the spot where the Emperor Napoleon from his
throne distributed the Insignia of the Legion of
Honour to his illustrious and unconquered
army, the defenders of their country;
That the memory of that day, the 16th August, 1804,
and the glory of the army, might be delivered to
posterity by a monument consecrated to them,
Caused THIS *Column*, begun by the army, November
9, 1804, but unfinished through various causes,
To be completed and dedicated,
In the year 1841.

In August last, on the anniversary of the first distribution of the orders of the Legion of Honour, the statue was placed on the pillar, and this ceremony was made the occasion of a festival at Boulogne, lasting several days. The account of these rejoicings does not come within our province, and they have been already sufficiently described by the newspapers and other publications. Our purpose has been to notice the curious changes connected with this column: to record the distribution of the insignia of the Legion of Honour by Napoleon, is to preserve the connection between the monument and his memory, without pandering to national jealousy and love of war. Works of art ought not to be desecrated by a perversion of their original purposes: there is more of real dignity in preserving these magnificent records of the opinions of by-gone times, than, by attempting to destroy or pervert them, acknowledging a sense of humiliation in their presence, and perpetuating more strongly and extensively the intentions of the original founders.

Next to the Monument of London, the Napoleon Column is the highest in Europe. The base is 34 feet in height, the shaft 126 feet, and the statue, as we have already said, is 16 feet; giving a total of 176 feet. The Monument is about 26 feet taller.

THE ISLANDS OF ENGLAND.

[Continued from p. 400.]

HOLYHEAD correctly speaking is an island, although it is generally considered as a peninsula belonging to Anglesea. It is, however, separated from the larger island by a very narrow creek or channel, over which is a bridge with one arch of moderate span, by which route the mail used to travel on its way from London to Ireland. Except a few persons who during the summer come here for the sake of sea-bathing, it is not a place of much resort. Sometimes it is sought as a place of refuge by vessels caught in a storm upon this dangerous coast; and in the herring-fishery season a few boats are sometimes successfully employed.

Holyhead lies nearer to Ireland than any other part of Wales: the distance to Dublin, which is situated nearly due west, is little over sixty miles; and eastward to Liverpool the distance is nearly the same. The island upon which the town is built, not far from the northern extremity, is six or seven miles long, and more than one across in most places. Towards the sea it is high and rocky: and it is only where the town is situated that ships find a safe harbour. A large church stands at the bottom of the rock, and towards the southern extremity of the island is a small chapel. There is a small garrison kept here, and a lighthouse and signal-station are among the *lions* of the place. There are several caverns in the ledges of rock; and upon the whole, it may be considered a place presenting more to engage the attention of the curious than many other places that have obtained a more romantic reputation.

A few miles to the north of Holyhead are some dangerous rocky islets, called THE SKERRIES, upon one of which has been erected a lighthouse. They lie distant from the north-western extremity of Anglesea scarcely over a mile, and are directly in the route of vessels coming up St. George's Channel, after passing Holyhead, on their way to Liverpool. There are also a few more small rocky islets along the coast, east of

the Skerries, but not so directly in the route of vessels, and therefore considered of smaller importance.

It may be mentioned, also, in reference to Anglesea, that in a morass of considerable extent, which still remains undrained and uncultivated, on different occasions oak-trees of a tolerably large size have been dug out in a state of uncommon preservation, and, from appearances, in precisely the situation they had been prostrated to the earth. The *cromlechs*, the supposed altars of the Druids, are still more numerous here than elsewhere in Great Britain. The larger ones are formed by one very large flat stone, at one end of which is a smaller one, but both placed in an inclining position, and surrounded by eight or ten upright ones at no great distance.

BARDSEY ISLAND.

Pursuing a southern course on quitting Holyhead, this small island, which is scarcely two miles long by one broad, is the next that presents itself. It is situated at the south-western extremity of Caernarvonshire, about a mile from the mainland, from which it is separated by a rapid current. A lighthouse stands on a conspicuous part of it; and though little cultivation is attempted, it affords tolerable pasturage for sheep, and is inhabited by about twenty families. It was once resorted to as a place of religious sanctity; and it is said that 20,000 Britons, persecuted by the Saxons, sought refuge here, and lie buried within its narrow circuit. A monastery is reported to have existed here, and there are still numerous grave-stones; and a building supposed to have been the abbot's lodge and oratory is the only visible remains of such a consecrated edifice. In the part supposed to have been the oratory one of the peasants of the island performs the religious service.

During a portion of the year the inhabitants employ themselves in the dangerous pursuit of taking the eggs from the nests of the numerous wild-fowl which frequent the rocks, and deposit their eggs upon narrow ledges, which can only be reached by means of long ropes, by which these daring people are let down.

The Bishop and his Clerks.—This is the name given to a cluster of rocky islands of the most westerly part of Pembrokeshire, and on the northern side of St. Bride's Bay, and at no great distance from the town of St. David's. They are all uninhabited, but some of them offer a little pasturage for a few sheep. They, like most rocky islands near the mainland, are much frequented by large numbers of sea-fowl, which are an object with the inhabitants on the opposite shore, who come over and secure their eggs, and destroy some particular sorts for the sake of their feathers and down. The navigation is of so dangerous a character, that it was deemed expedient to erect a lighthouse here, which was built in the year 1777.

On the south side of the same bay are several more small islands, which lie at a short distance north-west of St. Ann's Point, at the entrance into Milford Haven, the most capacious harbour in Great Britain.

Caldy Island also lies off the same coast, but more to the eastward, and nearly south of the ancient town of Tenby. It is a mile and a half in length, and half a mile in breadth, and something over a mile from the nearest point of land. Some part of this island is under cultivation, and a few families reside here. A priory once existed upon this agreeably situated island, the site of which is still marked by the remains of a tower and some fragments of the foundation-walls.

Lundy Island.—This island, which is five miles long and two broad, is situated at the distance of eleven or twelve miles from the nearest land, and at the outward entrance into that spacious arm of the sea usually known as the Bristol Channel. It is encompassed by lofty rocks on every side, except at one place where there is a very narrow opening, which admits of a landing, but affords no harbour for vessels in distress. Formerly there was a small chapel upon this solitary island, which is now in ruins. There is a lighthouse upon the island, and a pyramidal rock called the Constable, is of considerable elevation; so that by night or by day this island may be descried at a considerable distance: it is, indeed, frequently the first land that the British homeward-bound vessels make in returning from an Atlantic voyage. A few families commonly reside here where a portion of the island is cultivated; but the greater part of it is pastured by sheep, the exposed situation being better adapted for pasturage than cultivation. The landing-place lies on the south-east part of the island, or north-west of Barnstable Bay.

The Holms, which lie farther up the Bristol Channel, consist of the islands known as Steep Holm, Flat Holm, and the Wolves, which, from their situation in the middle of the æstuary, serve to impede the navigation and render it more dangerous. Steep Holm is so named from the elevated character of ground, some of which rises upwards of 200 feet above the sea. The best part of the land is in possession of a farmer's family, who are the only inhabitants of the island. It lies west of the flourishing little town of Weston-super-Mare, in Somerset, nearly five miles; from whence, during the summer, parties of pleasure frequently make excursions to this and its neighbouring island, Flat Holm. Its extreme length is over half a mile, and the breadth half as much.

Flat Holm lies north of the former, at the distance of considerably more than a mile, and is scarcely so large as its neighbour, and, as its name seems to imply, is a low and level island. It is more in the middle of the Channel than the other island; and in consequence of this, and the low character of the land, a lighthouse has been built upon it, which can be distinctly seen from both the Welsh and English coasts. A vast number of sea gulls and some other sorts of wild-fowl frequent those islands, where they breed in the summer season.

The Wolves are two or three very small islands lying north-west of Flat Holm, distant about two miles, and not much farther distant from the north shore of the Channel. These last mentioned are of no importance, except that they add to the danger of the navigation of the British Channel. In the vicinity of those islands the Channel is about twelve or thirteen miles wide.

There are two or three other small islands westward of the islands just mentioned, along the coast of South Wales, but none of any such note as to deserve particular notice here.

SCILLY ISLANDS.

These islands, which form a numerous cluster at the distance of more than thirty miles from the Land's End in Cornwall, are a very interesting group; but a description of them has been given in the 'Penny Magazine,' vol. i., p. 203, so that a few words may suffice in this place. Six of the principal ones are inhabited, which are generally considered to rank thus: St. Mary's, Tresow or Tresco, St. Martin's, St. Agnes, Sampson, and Brehar; and these altogether contain a population exceeding 2000. From the more elevated places in Cornwall, near the Land's End, these islands are visible in clear weather; but they only appear like a cluster of rocks. There are several churches and chapels on the principal islands, and most of the land is cultivated; but many of the inhabitants engage in fishing, and the manufacture of kelp used to be carried to a considerable extent. Many

ships have been lost among the Scilly Islands; the navigation in their immediate vicinity is of so dangerous a character, that few ships—except accidentally—ever approach them. The voyage from Penzance in favourable weather is made in four or five hours. St. Mary's (which contains more than one-half of the whole population) is the principal island; but its length is only four miles and a half, and its breadth two miles and a half. These islands are considered part of the county of Cornwall; but they have certain ancient and local privileges that are peculiar to themselves.

THE CHANNEL ISLANDS.

In treating of the Islands of England, it becomes a matter of considerable doubt whether or not these islands ought to be included. It is true that they belong to England, and that they are situated in the *English* Channel; nevertheless they lie much nearer the coast of Normandy in France, and anciently belonged to that principality. Moreover the inhabitants, who are evidently of Norman descent, continue to speak the language of that country; while the same laws continue in force to which they were subjected while still under the Norman power. Hence it would rather appear, that although these islands belong to Great Britain, still, geographically considered, they ought not to be ranked among the Islands of England.

Though there are some smaller ones, and several detached rocks, the four principal islands are usually classed as follows: namely, *Guernsey*, *Jersey*, *Alderney*, and *Sark*. But as a full description of them has already appeared in the 6th volume of the 'Penny Magazine,' at pp. 329, 336, 357, and 381, all that need here be done is to refer the reader, as above enumerated, to a full and interesting description.

ISLE OF PORTLAND.

Although there are several rocky islets both on the north and south side of the peninsula formed by the counties of Cornwall and Devon, none of them appear to deserve a place in these remarks. But continuing eastward along the English Channel, the Isle of Portland presents itself as worthy of consideration. Though we commonly find it classed as an island, it is more properly a peninsula, since it is not totally severed from the mainland; for a narrow ridge of pebbles, which goes by the name of the Chesil Bank, and which extends westward many miles, leaving a narrow channel between it and the mainland, called the Fleet, connects Portland to the southern part of the county of Dorset. This island or peninsula is of a triangular shape, the greatest length of which is about four miles from north to south, and two miles across from east to west. It has long been noted for the beautiful freestone that it yields, many thousand tons of which are annually quarried and exported to London and various other places. Most part of the male population is employed in the quarries upon different parts of the island, while the tillage of the crops is left almost entirely to the women. The wall of rock serves to protect this island everywhere from the sea, except at a landing-place on the north, where Portland Castle, a place of great strength, is situated, and which completely commands Weymouth Roads, and lies three miles south of Weymouth. There are several villages and hamlets upon the island; and besides the corn raised by the inhabitants, a considerable number of sheep are pastured. The navigation in the immediate neighbourhood is very dangerous; hence two lighthouses have been erected on the southern part of the island. (See 'Penny Magazine,' vol. vii., pp. 57, 68, and 86.)

[To be continued.]

THE PURRAH.

The Purrah is a secret society in Africa among the Negroes.

Many of our readers, having been in the habit of regarding such societies as belonging to an intermediate state of civilization, higher than any which Negroland exhibits, will hear with surprise of their existence among the blacks. Yet the Purrah is not the only secret society among them; and, in truth, although such societies continue into the intermediate state of civilization, and may even survive, as a form, in the most civilized conditions of society which have yet been known, yet such societies commence in a more rude state of society than has been generally imagined. They have not only been found among the Negroes, but among the savages of the Pacific Islands.

All secret societies appear to have originated either in the desire to preserve and to transmit religious mysteries which were not known, and which, it was supposed, might not be safely made known, to the mass of the people; or else to concentrate and to exercise a political control over the government, or over the condition and destinies of a nation. Both objects might be, and often have been, combined in the same institution.

Our own Freemasons offer the example of a secret society, which by virtue of its traditions and ceremonies continues to subsist long after its original object is evaporated. For although, in modern times, the organization of this great body, and its signs of secret recognition, may in foreign countries have been used or abused for political purposes, there can be little doubt to careful inquirers that the original object of its institution was to preserve among polytheists the doctrine that THERE IS BUT ONE GOD. In those times this was a great secret, which could not be openly promulgated without danger. Now it is believed by half the world, by Christians and Moslems. It is, therefore, no longer a secret: yet we are persuaded that this, and no other, is the great historical secret of the Freemasons, kept up formally as such, long after the dogma itself has become a subject of popular belief. That there has, therefore, been no real secret to tell, is, no doubt, the best reason for the careful manner in which the conventional secret has been preserved; none of the body being willing to admit—and no one being ready to believe the admission if made—that the wonderful secret of which so much had been said, was, in fact, a matter which now everybody knew.

But it is time to introduce the reader to the Purrah. This institution is partly religious, but more political. Its range is limited to the country which extends from Sierra Leone southward to Cape Mount. This country is occupied by Bulloms and Succoos, and is divided into several small states. This institution consists of members from each of these states; that is to say, the Purrah drawn from such state exercises its functions upon that state or canton to which its members belong; while a grand council, elected from the senior members of all the sectional associations, exercises its authority over the whole. This last supreme body is presided over by a chief, or Grand Purrah-man, whose real power greatly exceeds that of any sovereign in those parts.

The whole number of initiated Purrah-men is supposed to be about 6000, in the five nations which are under the operation of the system. But the secret tribunal, or proper Purrah, contains but twenty-five members in each of the five sections; and the Grand Purrah is composed of five senior members from each of these, and consequently also contains twenty-five members.

No one can become a member of the sectional Pur-

rah until thirty years of age, nor of the Grand Purrah until the age of fifty. The admission into the general body is earlier, and a kind of noviciate; for it may be commenced even in boyhood. No one is fully admitted into this institution until such of his friends as already belong to it bind themselves by an oath to put him to death should he betray the secrets of the confederacy, or shrink during the progress of his initiation.

In each of the districts comprised within the limits of this association, there is a sacred grove set apart to the use of the Purrah. To this wood the candidate is conducted, and is there obliged to remain in a place appropriated for him. In a solitary and contracted habitation he is confined several months. He receives his food from men in masks, who preserve the most impenetrable silence; and the candidate himself dares neither speak nor to quit for a moment the hut in which he has been placed. Should he attempt to penetrate into the forest by which he is surrounded, he is instantly struck dead, and is heard of no more.

It is remarkable that some such a preparatory period of solitude and mortification has been a preliminary to initiation in almost every secret and mystic institution, obviously with the intention of working the candidate into a fitting frame for receiving the full force of the impressions which the ceremonies of initiation are intended to convey.

After several months of this preparation, the candidate is admitted to the trial, in which his resolution and courage are put to the most severe and terrible proofs which the African mind has been able to devise. No one has been able to ascertain all the particulars, it being difficult to obtain exact information concerning this and other operations of the Purrah, and often dangerous to make inquiries. It is however said, that lions and leopards only partially confined are employed on this occasion; the sacred wood resounds with the most frightful howlings; and during the night vast conflagrations are seen in different quarters, seeming to indicate a general destruction; while at other times fire is seen to pervade the mysterious wood in all directions. But if curiosity or ignorance attracts any one within the sacred grove, he is sacrificed without mercy; and proofs are not wanting that on such occasions many indiscreet persons have disappeared, and have been heard of no more.

When the candidate has passed through his terrible probation, an oath is extracted from him, binding him to preserve inviolate all the secrets which have been or may be committed to him, and to execute with blind obedience the decrees and orders of the association of his own tribe, as well as those of the grand council.

On entering the society, every member lays aside his former name, and assumes a new one; and to call him by his old name afterwards is considered an insult.

The object of this institution appears to be, to keep in check the local government and its officers—the sectional Purrah in its own state, and the grand Purrah (which only meets on great occasions) over the whole; by sitting as a tribunal of secret justice, not only on private crimes, but on public transactions, and executing its own decrees with the certainty of fate. Resembling in this and in some other respects the Secret Tribunal which formerly existed in Germany, it takes special cognizance of murder and witchcraft, and employs the utmost vigilance in watching the conduct of its own members, whose slightest act of contumacy or disobedience is visited with inconceivable rigour.

The sentence of this tribunal upon those whom it dooms is never known until it is inflicted. The only punishment which such a tribunal can inflict is death; and the death which it dooms falls upon the victim in a manner so secret, so sudden, and so unexpected, that the perpetrator is never known. Indeed, such is the awe inspired by this institution, that they are never inquired after.

The most beneficial part of this society's operations results from its frequent interference in putting a stop to wars and family feuds. In such matters it does not indeed interfere until secretly solicited; but then its interference is final and effectual. As if of its own mere motion, the Purrah meets and declares that it cannot suffer hostilities to continue between those who should live in friendship together; and that it is determined to put an end to such excesses. Both parties then lay down their arms, and the Purrah generally spends a month in investigating the grounds and merits of the quarrel, and sometimes pronounces a severe judgment upon the aggressors, the execution of which it entrusts to the warriors of their own body, who always act with masked faces.

The meetings of the Purrah are held in the most retired spots, amid the gloom of night, and are carried on with the most inquisitorial secrecy. When the Purrah comes into a town, which is always at night, it is accompanied by the most dreadful howlings, screams, and other horrid noises. Such of the inhabitants as do not happen to belong to the society are obliged to keep within doors. Should any one be found without, or attempting to peep at what is going on, he would most certainly be put to death. To restrain the curiosity of the women, they are not only bound to stay within doors, but to keep up an incessant clapping with their hands as long as the Purrah remains.

A power so secret and so irresponsible cannot but be often abused—cannot, indeed, but become a tyranny both to people and to governments, with whatever good intentions it may have been originally founded. Hence it is regarded with unmitigated horror by the people, who cannot even speak of it without manifesting tokens of terror and apprehension. They believe, in fact, that the Purrah-men have constant intercourse with demons, who are subject to their orders and control; and this is a belief which, since it strengthens their power, the Purrah itself is by no means anxious to discourage.

Discourse.—Some in their discourse desire rather commendation of wit, in being able to hold all arguments, than of judgment, in discerning what is true; as if it were a praise to know what might be said, and not what should be thought. Some have certain common-places and themes, wherein they are good, and want variety; which kind of poverty is for the most part tedious, and, when it is once perceived, ridiculous. The honourablest part of talk is to give the occasion; and again to moderate and pass to somewhat else, for then a man leads the dance.—*Bacon's Essays.*

Sun-Rise on Mount Etna.—The gradual manner in which the curtain of the night is drawn up, and the enormous landscape exposed to view, from such an elevated station as Etna, is what no imagination can pretend to conceive—no experience in the smallest degree prepare us for. We have the authority of Captain Smyth, the great surveyor, for saying that the radius of vision from that spot is about one hundred and fifty miles—or, in other words, that the eye takes in, at one view, a range of the earth's surface three hundred miles in width! It will be easily understood that certain parts of this gigantic panorama enjoy the touches of the coming day long before others. The highest and the most eastern, of course, are the first lighted up—but owing to the shaded sides of all objects situated in that direction being turned to the spectator, very curious modifications take place, and give to those elevated spots which lie to the westward a priority of distinctness in their details which we should not have anticipated. As the fields and towns, and the various indentations of the coast become visible, and the colours of the foliage begin to show themselves, we are apt to fancy the sun must be close at hand; but it is generally long after this period that he actually appears—such is the surpassing splendour of his rays. This effect is perhaps increased by the clearness of the air at great altitudes.—*Captain Basil Hall's Patchwork.*



[John Kelsey.]

MENTAL DELUSIONS.

The reply of the madman, who, when asked why he was confined, replied, "I thought the world mad, and the world thought me mad, and they outvoted me," serves to describe very accurately a species of monomania which is often occurring. It is that wherein an individual devotes himself enthusiastically to the pursuit of an object, possibly desirable in itself, but either altogether impracticable, or for the attainment of which the aspirant has neither qualifications nor opportunity of effecting; it also takes the form of error as to personal identity, the delusion leading to a claim of rights and the adoption of ideas which would fitly belong to the personage the individual supposes himself to be. We do not here include instances of religious delusion or fanaticism, or cases of mere imposture, but those concerning temporal affairs, in which individuals have displayed a stubbornness and disinterestedness in opposing the arguments and the power of their fellow-men which can only proceed from their own conviction of being in the right, and their more numerous adversaries in the wrong. To a minor degree of this class belong the mere projectors—seekers of perpetual motion, or matters of a similar character—and displaying in many cases an equal amount of self-sacrifice, though perhaps not without an eye to ultimate advantage. Such cases, however, are oftener witnessed in private life than brought before the eye of the public; the individuals fail, and probably die unknown, while the occasional occurrence of a man of genius working through difficulty and hardship to some glorious consummation, reconciles them to their fate, and seems to sanctify their pursuit. From some recorded cases of such descriptions we select a few curious examples.

In the reign of Anne, a gentleman named Stukely left his practice as a barrister and retired into the country to perfect his discovery of the perpetual motion, and never left it but once for thirty years, when he took the oath of allegiance to George I., and on which occasion, for the only time, he shaved, and changed his shirt and clothes. Before he died, he had abandoned his pursuit of the perpetual motion, and would laugh at his own folly in confining himself in doors; but he replaced his project by a close study of the economy of ants, increasing their colonies to such an extent as to cause the destruction of the fruit in the neighbouring gardens; and when he died, he was occupied in building a house with walls seven feet thick.

In 1810, Simon Southwood, a miller, died in Horsham gaol, after a confinement of forty-three years. He fancied himself Earl of Derby and King of Man; he is described as having a commanding appearance, as being of affable manners and polite bearing, but apt to be wrath when any doubt was expressed as to his dignity. He was addressed by his fellow-prisoners, as well as by the governor of the gaol, as "My Lord," and would answer to no other address even to strangers. He was supported by a stipend from the parish of

Boxgrove, which he managed with the greatest economy, but supposed himself a state prisoner, and would never accept of any favour, not even of a meal, or of clothes, under any form but that of its coming from his cousin the king.

But these instances affect only personal objects or pursuits; in others it takes a wider range, and is directed to public interests. Richard Brothers affords a curious example of the growth of such delusions. After having served for several years in the British navy, a scruple as to taking an oath, required on receiving his pension, brought him into controversy with the Lords of the Admiralty, and his objection was in part so well founded, that the use of the word *voluntarily*, as the oath was declared to be taken, was ordered to be discontinued; but his objections increased, he declined taking an oath at all, even though almost dying with hunger, and was only rescued from death by being taken to a workhouse. This was in 1789, and in 1790 he announced that he had a mission for the restoration of the Jews, to make Jerusalem the capital of the world, and to notify the same to the king, the ministers, and the House of Commons, for their guidance. The latter part he executed with a zeal which was at length rewarded by an imprisonment in Newgate. From thence he was at length released, and occupied himself for the rest of his life in prophesying and forwarding the objects of his mission; but as "he was unassuming in his manners, careful not to give personal offence, and courted retirement rather than publicity," the world were contented to smile at rather than to punish him for opinions as to which, though himself retaining a clear conviction of their truth, he was so evidently outvoted.

At an earlier date, Roger North, in his 'Life of Sir Dudley North,' his brother, relates a curious example of this species of delusion as occurring at Constantinople, but where it was not treated with so much moderation as in London:—"In this time (during the embassy of Lord Winchelsea, about 1680) one John, a Quaker, went on a sort of pilgrimage to Constantinople for converting the Great Turk, and the first scene of his action was standing up in a corner of the street, and preaching to the people. They stared at him, and concluding him out of his wits, he was taken and carried to the mad-house; there he lay six months. At last some of the keepers heard him speak the word English, and told it so as it came to the ambassador's ear, that he had a subject in the mad-house. His lordship sent and had him to his house. The fellow stood before the ambassador with a ragged dirty hat on, and would not put it off, though he was so charged and admonished; thereupon the ambassador ordered him down, and had him drubbed upon the feet, after the Turkish manner. Then he was anything, and would do anything, and afterwards did own that that drubbing had a great effect upon his spirit. Upon searching him, there was found in his pouch, among a few beans, a letter to the Grand Signor, very long and canting; but the substance was, to let him know that he was the scourge in God's hand with which he chastised the wicked Christians; and now their wickedness was so great, that God by the Spirit had sent him, to let him know that he must come forthwith to scourge them. He was sent for England, but got off by the way, and came up a second time to Constantinople, from whence he was more surely conveyed; and some that knew John, told Sir Dudley North they had seen him on the Exchange, where he recognised the admirable virtue of Turkish drubbing."

Caulfield, in his 'Remarkable Persons,' says the name of this person was Kelsey, and gives the portrait of him, which we have copied.

A case has also recently occurred, and has appeared in the newspapers, which belongs to the same class as the above. A Swiss Roman Catholic priest, named Louis Waters, was charged at a police-office with fraudulently collecting subscriptions towards a mission for converting the Chinese, to which he stated he had been appointed by the Rev. Dr. Griffiths, the Roman Catholic vicar apostolic of London. We copy the proceedings as given in the newspapers of August 31:—

"Mr. Lee, private secretary to Dr. Griffiths, came forward to state what he knew of the defendant's proceedings. For some months past the defendant had been daily in the habit of calling with a letter at Dr. Griffiths's house, on the subject of his wish to be appointed Chinese missionary. From all that witness had been able to collect, and judging principally from the unvarying tenor of his daily letters, he was of opinion that the defendant laboured under a kind of delusion, and that his mind was rather weak upon missionary matters. When first he corresponded with Dr. Griffiths, he wished to go out to Russia to convert the Russian Emperor; but when China became the leading topic of the day, then he all at once grew importunate for leave to go out as a missionary there.

"Mr. Lee here displayed a number of letters received from the prisoner. One of them was not a little curious. It was addressed to her Majesty Queen Victoria, who was further described as Empress of all the Russias.

"Mr. Lee said he thought it would be advisable to apprise the defendant's friends in Switzerland of the state of the defendant's mind, for it appeared to him very imprudent to leave the defendant without control.

"Mr. Maltby, taking up one of the defendant's letters, asked him why he had in so many places addressed her Majesty as Queen Victoria, Empress of all the Russias.

"The defendant, in broken English, said, when he wrote the letter he had great hopes of inducing her Majesty to accept the hand of the Crown-Prince of Russia, and when her Majesty was 'elevated,' that she would take him over, and assist him in the project of converting the Russians to the true faith. But his hopes in this respect had been blighted by the union of her Majesty with Prince Albert.

"Mr. Maltby.—As I should be reluctant to inflict the punishment awarded to the offence of which you are accused, on a person stated to be, as you are, labouring under a delusion and of weak mind, will you, if I consent to let you off, undertake to go back to your friends in Switzerland?

"Defendant.—I ondertake noting but de Shinese mission.

"Mr. Maltby being of opinion that the defendant was really of weak mind, sent for his papers, in order to make some arrangement to place the defendant within the reach of his friends."

This is certainly a kinder proceeding than that of the Turkish drubbing; and goes far to prove that the world has now at least the appearance of possessing not only the majority of votes on such matters, but also a kind, and therefore the more likely to be a right, feeling and judgment.

Recollections of Canonbury.—Canonbury, the place so well known as the residence of Goldsmith, in one of the rooms of the tower of which was written, under a pressing pecuniary necessity, that most admirable of fictions, the 'Vicar of Wakefield.' These pressing necessities unfortunately occurred very often; and another and less agreeable memory of Canonbury House than that of the composition of the 'Vicar of Wakefield,' is, that Goldsmith here frequently hid himself for fear of arrest. The warm-hearted bookseller Newberry, for whom Goldsmith wrote so much, then rented the house. From hence the poet was frequently accustomed to set out, with some or other of his numerous and distin-

guished list of friends, on excursions through the surrounding country. The beauties of Highgate and Hampstead, distinctly visible from his windows, no doubt were often a temptation to him to throw aside his books. Various other literary men have lived at Canonbury; among whom we may mention Chambers, the author of the Cyclopædia known by his name. Nor are interesting names belonging to men of a different class wanting. Here the "Rich Spencer," for instance, of whom and his moderate-minded daughter we have spoken in a former paper, lived, and has bequeathed to Canonbury some noticeable recollections. In a curious pamphlet, entitled 'The Vanity of the Lives and Passions of Men, by D. Papillon, gent., 1651,' occurs the following remarkable passage, in connection with this great *millionaire* of the sixteenth century:—"In Queen Elizabeth's days a pirate of Dunkirk laid a plot, with twelve of his mates, to carry away Sir John Spencer; which if he had done, fifty thousand pounds had not redeemed him. He came over the seas on a shallop with twelve musketeers, and in the night came into Barking Creek, and left the shallop in the custody of six of his men, and with the other six came as far as Islington, and there hid themselves in ditches near the path in which Sir John always came to his house; but, by the providence of God, Sir John, upon some extraordinary occasion, was forced to stay in London that night, otherwise they had taken him away; and they, fearing they should be discovered in the night time, came to their shallop, and so came safe to Dunkirk again." The author adds that he obtained this story from a private record. At Sir John's death in 1609 some thousand men were present, in mourning cloaks and gowns, amongst whom were three hundred and twenty-four persons who had each a basket given to him containing a black gown, four pounds of beef, two loaves of bread, a little bottle of wine, a candlestick, a pound of candles, two saucers, two spoons, a black pudding, a pair of gloves, a dozen of points to tie his garments with, two red herrings, four white herrings, six sprats, and two eggs. We must add to these reminiscences of the family, that his daughter, the writer of the letter transcribed in 'Crosby Place,' is said to have been carried off from Canonbury in a baker's basket by Lord Compton, who became her husband, and who at her father's death was unable to bear with equanimity the immense fortune that devolved to him: he was distracted for some time afterwards. His death happened under strange circumstances:—"Yesterday se'nnight the Earl of Northampton (he had now succeeded to this earldom), Lord President of Wales, after he had waited on the King at supper, and he had also supped, went in a boat with others to wash himself in the Thames, and so soon as his legs were in the water but to his knees, he had the colic, and cried out, 'Have me into the boat again, or I am a dead man!' and died in a few hours afterwards, June 21, 1630."—*London*, No. 28.

Sight of the Atlantic and Pacific Oceans.—Beyond this we came into an open region, where nothing but cedar and thorns grew; and here I saw whortleberries for the first time in Central America. In that wild region there was a charm in seeing anything that was familiar to me at home, and I should have perhaps become sentimental, but they were hard and tasteless. As we rose, we entered a region of clouds. Very soon they became so thick that we could see nothing; the figures of our own party were barely distinguishable, and we lost all hope of any view from the top of the volcano. Grass still grew, and we ascended till we reached a belt of barren sand and lava; and here, to our great joy, we emerged from the region of clouds, and saw the top of the volcano, without a vapour upon it, seeming to mingle with the clear blue sky; and at that early hour the sun was not high enough to play upon its top. Mr. Lawrence, who had exerted himself in walking, lay down to rest, and the doctor and I walked on. The crater was about two miles in circumference, rent and broken by time or some great convulsion; the fragments stood high, bare, and grand as mountains, and within were three or four smaller craters. We ascended on the south side by a ridge running east and west, till we reached a high point, at which there was an immense gap in the crater, impossible to cross. The lofty point on which we stood was perfectly clear; the atmosphere was of transparent purity; and, looking beyond the region of desolation below us, at a distance of perhaps two thousand feet, the whole country was covered with clouds, and the city at the foot of the volcano was invisible. By degrees the more distant clouds were lifted, and over the immense bed we saw at the same moment the Atlantic and Pacific oceans. This was the grand spectacle we had hoped, but scarcely expected, to behold. My companions had ascended the volcano several times; but, on account of the clouds, they had only seen the two seas once before. The points at which they were visible were the Gulf of Nicoya and the harbour of San Juan, not directly opposite, but nearly at right angles with each other, so that we saw them without turning the body. In a right line over the tops of the mountains, neither was more than twenty miles distant; and, from the great height at which we stood, they seemed almost at our feet. It is the only point in the world which commands a view of the two seas; and I ranked the sight with those most interesting occasions when, from the top of Mount Sinai, I looked out upon the desert of Arabia, and from Mount Hor I saw the Dead Sea.—*Stephens's Incidents of Travel in Central America.*

Shakspere not a Horse-boy.—Although John Shakspere, at the time of his son's early marriage, was not, as we think, 'in distressed circumstances,' his means were not such probably, at any time, as to have allowed him to have borne the charge of his son's family. That William Shakespere maintained them by some honourable course of industry we cannot doubt. Scrivener or schoolmaster, he was employed. It is on every account to be believed that the altered circumstances in which he had placed himself, in connection with the natural ambition which a young man, a husband and a father, would entertain, led him to London not very long after his marriage. There, it is said, the author of 'Venus and Adonis' obtained a subsistence after the following ingenious fashion:—"Many came on horseback to the play, and when Shakspere fled to London from the terror of a criminal prosecution, his first expedient was to wait at the door of the playhouse, and hold the horses of those who had no servants, that they might be ready again after the performance. In this office he became so conspicuous for his care and readiness, that in a short time every man as he alighted called for Will Shakspeare, and scarcely any other waiter was trusted with a horse while Will Shakspeare could be had." Steevens objects to this surpassing anecdote of the horse-holding, that the practice of *riding* to the playhouse never began, and was never continued, and that Shakspere could not have held horses at the playhouse door, because people went thither by water. We believe there is a stronger objection still: until *Will Shakspere* converted the English drama from a rude, tasteless, semi-barbarous entertainment, into a high intellectual feast for men of education and refinement, those who kept horses did not go to the public theatres at all. There were representations in the private houses of the great, which men of some wit and scholarship wrote, with a most tiresome profusion of unmeaning words, pointless incidents, and vague characterization,—and these were called plays; and there were 'storial shows' in the public theatres, to which the coarsest melo-drama that is now exhibited at Bartholomew Fair would be as superior as Shakspere is superior to the highest among his contemporaries. But from 1580 to 1585, when Shakspere and Shakspere's boys are described as holding horses at the playhouse-door, it may be affirmed that the English drama, such as we now understand by the term, had to be created. We believe that Shakspere was in the most eminent degree its creator. . . . It has been discovered by Mr. Collier that, in 1589, when Shakspere was only twenty-five, he was a joint proprietor in the Blackfriars theatre, with a fourth of the other proprietors below him in the list. . . . It appears to us not improbable that even before Shakspere left Stratford, he had attempted some play or plays which had become known to the London players. Thomas Greene, who, in 1586, was the fourth on the list of the Blackfriars shareholders, was said to be Shakspere's fellow-townsman. But the young poet might have found another and more important friend in the Blackfriars company—Richard Burbage, the great actor, who in his own day was called "the English Roscius," was also of Shakspere's county. . . . It is perfectly clear therefore that Shakspere, from the easy access that he might have procured to these men, would have received inviting offers to join them in London, provided he had manifested any ability which would be useful to them. That ability, we have no doubt, was manifested by the production of original plays (as well as by acting) some time before he had attained the rank and profit of a shareholder in the Blackfriars company.—*Life of Shakspere, in 'Store of Knowledge.'*



RAILWAY RAMBLES.

STOKE

To the north of the Great Western Railway, after the station at West Drayton is passed, and continuing onward to Maidenhead, the traveller sees a gently rising tract of country forming in the distance a long line of woodland. This table-land, which is two or three miles in width, terminates in a western direction with the abrupt hills of Hedsor and Cliefden, which are the great charm of the scenery of the Thames from Marlow to Cookham. In this upland district there is much to be seen which is beautiful in itself, and is connected with interesting remembrances; and as Slough, which is the nearest point to this district, may be reached from London in forty-minutes, at the cost of half-a-crown, we may probably have the satisfaction of pointing out a new direction to those who have a holiday at their command. The reader who has no holiday in prospect may find some little amusement in what we have very briefly to describe.

Close to the station at Slough there is a bridge over the Railway. The road to which it belongs leads to the village of Stoke. The rambler sees a pretty white spire peeping out of the woodland before him, at the distance of about a mile and a half. The road leads to Stoke Green. Alas! we may lament for what is no more, and the name is a mockery. There *was* a village green some twenty years ago—the prettiest of greens; but there is now a strait road between two tall hedge-rows; and the cheerful spot where the noise of cricket and bass-ball once gladdened the ear on a summer eve is now silent. We pass on through some shady lanes, and across a field or two; and we are at one of the entrance-lodges of Stoke Park, the seat of Mr. Granville Penn, a descendant of the great Penns of Pennsylvania. We enter; for the road also leads to the village church. It is impossible for any church and churchyard to be more beautifully situated than this of Stoke. The church itself is very old; and it has a venerable look, with its antique windows and its massive wooden porch. The tower, too, is as old as any part of it; but the spire is modern. The churchyard, a moderate-sized inclosure, is surrounded with the soberest of trees, yew, and cypress, and dark pine; and the grassy graves lie solemnly beneath their thick shadows. But all around is brightness; verdant glades dotted with magnificent elms, with a fine mansion in the background. But yet the church and the churchyard absorb all our interest. This, we believe, is the scene of one of the most popular poems in the English language—the 'Elegy written in a Country Churchyard;' and here is the author of that poem buried.

"It is said that within the precincts of the church of Grantchester, about two miles from Cambridge, Gray wrote his Elegy. The curfew mentioned by the poet was of course the great bell of St. Mary's." So we are informed in a note to Mr. Mitford's edition of Gray's works. But when we look at the artificial character of most of Gray's poems, and of parts of this Elegy, we are inclined to think that—

> "The Curfew tolls the knell of parting day,"

is merely one of those *set* poetical images with which the mind of Gray was imbued. All that is natural and therefore truly descriptive in this poem might have been furnished by Stoke churchyard. We have here "the ivy-mantled tower" (for, as we have said, the spire is modern); we have here the "rugged elms," and the "yew-trees' shade:" the "frail memorial" of the poor—

> "With uncouth rhymes and shapeless sculpture deck'd,"

is common to all country churchyards. But in this Elegy there is a description, which is true to the letter, of the scenery in the neighbourhood of Stoke, amidst which Gray passed all his college vacations during the

life of his mother, and which he has himself described in his letters. We shall compare a well-known passage in the Elegy with the prose description, which is less generally familiar:—

"Haply some hoary-headed swain may say,
Oft have we seen him at the peep of dawn
Brushing with hasty steps the dews away,
To meet the sun upon *the upland lawn*.

There at the foot of yonder *nodding beech*,
That wreathes its *old fantastic roots so high*,
His listless length at noontide would he stretch,
And pore upon the brook that babbles by.

Hard by *yon wood*, now smiling as in scorn,
Mutt'ring his wayward fancies he would rove,
Now drooping, woful-wan, like one forlorn,
Or craz'd with care, or cross'd in hopeless love.

One morn I miss'd him on the custom'd hill,
Along the heath, and near his fav'rite tree;
Another came; nor yet beside the rill,
Nor up the lawn, nor at the wood was he."

The letter to which we refer is one written by Gray from Burnham, a village at a short distance from Stoke, to his early friend Horace Walpole. It is dated September, 1737, when the poet was twenty-one years of age:

"I have, at the distance of half a mile, through a green lane, a forest (the vulgar call it *a common*) all my own, at least as good as so: for I spy no human thing in it but myself. It is a little chaos of mountains and precipices; mountains, it is true, that do not ascend much above the clouds, nor are the declivities quite so amazing as Dover Cliff; but just such hills as people who love their necks as well as I do may venture to climb; and crags that give the eye as much pleasure as if they were more dangerous. Both vale and hill are covered with most venerable beeches, and other very reverend vegetables, that, like most other ancient people, are always dreaming out their old stories to the winds,

"And as they bow their hoary tops, relate,
In murm'ring sounds, the dark decrees of fate;
While visions, as poetic eyes avow,
Cling to each leaf, and swarm on every bough."

At the foot of one of these squats Me I* (il penseroso), and there grow to the trunk for a whole morning. The timorous hare and sportive squirrel gambol around me like Adam in Paradise before he had an Eve; but I think he did not use to read Virgil, as I commonly do there."

The four stanzas in the Elegy, and the passage in the letter to Walpole, are equally descriptions of Burnham common or Burnham beeches—one of the most splendid little bits of wild forest scenery that can be imagined—to which we shall by and by conduct our rambling friends.

There was a stanza in the original manuscript of the Elegy, afterwards suppressed, which appears to us singularly to describe the solemn and secluded character of Stoke churchyard:—

"Hark! how the sacred calm that breathes around
Bids every fierce tumultuous passion cease;
In still small accents whispering from the ground
A grateful earnest of eternal peace."

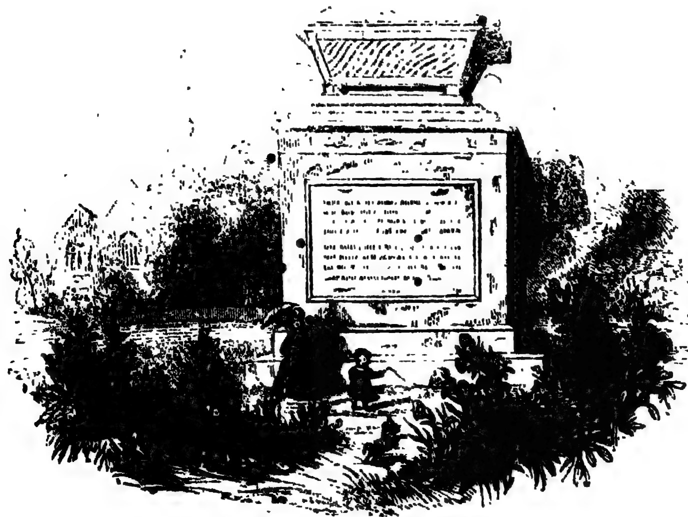
About the period when Gray wrote, or rather completed the Elegy (for it was some time in hand, according to his fastidious taste in composition), his aunt died, who lived with his mother at Stoke. In Stoke churchyard that aunt was buried. Upon the occasion of this bereavement he wrote to his mother, "However you may deplore your own loss, yet think that she is at last easy and happy." The churchyard through which she passed to her Sabbath devotions was

"A grateful earnest of eternal peace."

Where she rests, Gray's mother also rests; and the son has inscribed upon the plain flat stone which covers her raised tomb one of the most simple and therefore affecting epitaphs in our language:—

"In the vault beneath are deposited,
In hope of a joyful resurrection,
the remains of
Mary Antrobus.
She died, unmarried, Nov. v., MDCCXLIX.

* This seems to have been a sort of cant phrase of the day. It occurs in Smollett's translation of 'Don Quixote,' and is found earlier in Cibber. Foote also uses it.



[Monument to Gray at Stoke.]

Aged LXVI.
In the same pious confidence,
Beside her friend and sister,
Here sleep the remains of
Dorothy Gray,
Widow, the careful tender mother of many children,
One of whom alone had the misfortune to survive her.
She died, March xi., MDCCLIX., aged LXVII."

Under the same stone, without any record, is buried Thomas Gray, the author of the 'Elegy written in a Country Churchyard.' A small tablet recently inserted in the wall of the church, records that he is buried in the same tomb with his mother and aunt. The memorial was scarcely necessary. Believing this to be the scene of his most beautiful poem, we may say of him, as is said of Sir Christopher Wren in Saint Paul's,

"If you seek his monument, look around."

The late Mr. John Penn, justly feeling that the memory of Gray lent the highest value to the beautiful domain of which he was the possessor, erected a monument to the memory of the poet, in a spot not far removed from the churchyard. This stands in a pretty garden, into which the stranger may walk, and refresh himself with the recollections of the poet, by reading lines from the 'Elegy,' and the 'Ode on a distant Prospect of Eton College,' inscribed on its four sides.

ON GALLINACEOUS BIRDS INCLUDED UNDER THE HEAD OF GAME.

[Concluded from page 403.]

CLOSELY allied to the common partridge is the quail (*Coturnix dactylisonans*), which is one of our summer visitors, and perhaps not strictly to be numbered among our feathered game: its flesh is excellent. The quail is much less than the partridge, being only about seven inches in length; it however resembles that bird in its form and modes of life. It is widely spread, being found throughout the whole of southern and temperate Europe, and the greater part of Asia and Africa, but it is everywhere migratory.

In our island the quail makes its appearance in May, but not in great abundance, and, as it is said, less so than formerly. Richly cultivated lands are its favourite localities, and especially extensive wheat-fields. The species is polygamous, in which respect it differs from the partridge, and, on their first arrival, the males may be heard uttering their whistling call-notes in defiance of each other. In France, whence the London markets are principally supplied with these birds, advantage is taken of the note of the males to lure them under nets, the bird-catchers having a call made to imitate it. As by this device few excepting the males are captured, we may easily account for the fact that out of the hundreds kept alive by the London poulterers for sale, the number of females is very inconsiderable.

The female makes an artless bed in a slight hollow of the ground for her eggs, which are of a green tint, and vary in number from eight to twelve or even fifteen. In the month of October the quail departs. Africa is undoubtedly the great winter abode of this species; and it is across the Mediterranean, the Black Sea, and the Red Sea that countless multitudes, passing to that country from Europe and Asia, and returning from it to their summer haunts, wing their flight.

During their passage across the Mediterranean, they rest on different islands, to some of which the ancients gave the name of Ortygia, from the Greek word ὄρτυξ, a quail. Varro gives us an account of the arrival in spring, and departure in autumn, of quails in prodigious multitudes on various islands bordering the southern coast of Italy, where they were accustomed to rest during their migratory journeys. M. Godehen ('Mém. de Mathém. et Physique'), in confirmation of Varro's statement, observes that he has seen these birds continually passing to Malta in the month of May, carried by certain winds, and again repassing in the month of September. Among other islands, that of Capri (near the Gulf of Naples) is celebrated for the multitudes which periodically visit it; and at Nettuno and other places along the Italian coast, incredible numbers make their appearance. In the neighbourhood of Nettuno, within an area of four or five miles, 100,000 are said to have been taken in a single day. On the coast of Provence, vast flocks also appear, and the birds are often so exhausted with their flight as to suffer themselves to be taken by the hand. According to Baron de Tott, no country abounds more in quails than the Crimea; they arrive there in spring, crossing the Black Sea, and return southwards in August. At the close of a "serene day, when the wind blows from the north at sunset and promises a fine night, they repair to the strand, take their departure at six or seven in the evening, and have finished a journey of sixty leagues by break of day." The flights of quails, which were brought by a wind from the sea, as a supply to the Israelites in the desert, were evidently directing their course northwards from Abyssinia, Nubia, and the southern districts of Arabia.

In Portugal the quail is said to be stationary; it is not so, however, in Sicily or Italy. Pliny, who comments on the vast flocks of quails which passed across the Mediterranean, informs us that the Romans did not use them as food, accounting them unwholesome, in consequence of their feeding on the grains of the hellebore, and being subject to epilepsy; they kept them, however, for the purpose of making them fight with each other, which the males will do with great resolution; and a similar practice is said to exist among the Chinese. The pugnacious habits of the males in spring and summer are notorious, and the ancients had a proverb—"as quarrelsome as quails in a cage." The quail is too well known to need, in this place, a detailed description of its prettily marked plumage.

From the pheasant, the partridge, and its allies, we may now pass to the grouse tribe, of which several species are in high esteem, and rank among the foremost of our feathered game. Of these, one species, the red grouse (*Tetrao Scoticus*), is exclusively peculiar to the British Islands, being found in no part of the Continent. This beautiful and valued bird is common on the high moorland districts of the northern counties of England, Scotland, Wales, and Ireland, where the heath affords it shelter and concealment. During the autumn and winter, it associates in flocks or *packs*, which are often wild and shy, and not easily approached. Early in the spring, the sexes pair; the female lays her eggs in March, making a rude nest of sprigs of heath and grass upon the ground, under the shelter of a tuft of heath or of the bilberry plant (*Vaccinium Myrtillus*). The young are strong on the wing by August. As is the case with the partridge, the male takes no part in the labour of incubation, but joins the female and the young brood as soon as hatched. The red grouse feeds upon the tender shoots of heath, on bilberries, whortleberries, and the berries of other species of Vaccinium, and occasionally upon oats, for which it will sometimes visit the stubble lands bordering the moors. Its flight is rapid and powerful.

During the months of August and September, the slaughter made on the moors among the red grouse is very great, so that were it not carefully protected during the breeding season, the species would soon become extinct; of this at present, however, there is little danger.

The plumage of the red grouse is very rich, the go-

neral tint being deep chestnut, diversified with zigzag bars and dots of black. The legs and toes are thickly clad with hair-like feathers, and a bright scarlet-fringed skin, largest in the male, surmounts the eye.

The Ptarmigan (*Lagopus mutus*) is closely allied to the red-grouse. This bird inhabits the Highlands of Scotland, and the adjacent isles, and is spread throughout the mountain-districts of Norway, Russia, and the colder regions of Europe. Instead of frequenting moorlands, it resorts to the rocky summits of wild and sterile mountains, where, amidst fragments of rock and rough stones, it seeks concealment. The ptarmigan pairs early in the spring, the female making no nest, but laying her eggs on the ground amongst the rough stones. The young brood continue associated together till the succeeding spring; and usually several broods join so as to form a large flock. When the snow covers the ground, these birds burrow beneath it, not only in quest of food, but for the sake of the warmth and security thus afforded. They subsist on the shoots of mountain-plants and various berries. One of the most remarkable facts connected with the history of this species is its change from a rich and spotted livery, its summer dress, to one of pure white. In spring, for example, the plumage is varied with black and deep reddish yellow, the quill-feathers being white with black shafts. Towards autumn the yellow gives place to greyish white, and the black spots become irregularly broken, till at last they disappear, the plumage whitening to the purity of snow. At the same time it acquires greater fulness: and the legs and feet are so densely clad as to resemble those of a hare. As spring returns, the ptarmigan begins to lose the pure white of his plumage, and regain his summer dress. The process is gradual, and not produced, as in winter, by an alteration of the colouring of the feathers themselves, but by the acquisition of new ones, in their turn to become white. The ptarmigan utters a loud harsh call-note. Its flesh is very inferior to that of the red-grouse.

Two forest-grouse next demand our notice, the Capercaillie and the Black-Grouse.

The Capercaillie (*Tetrao urogallus*), one of the noblest of its tribe, was formerly common in the pine-forests of Scotland and Ireland, is now no longer to be met with, having been extirpated for several years. Attempts however have been recently made, we believe, to restore the species to some of the woods in Scotland, but with what success we know not.

In the forests of Sweden, Norway, and Russia the capercaillie is very common, and is found also in the pine-woods of the Alps.

The adaptation of the toes of this bird, and also of the black-grouse, for the branches, is very curious. Their edges are all fringed with hard rough prominences, which, though the toes have little prehensile power, give security to the footing on the slippery bark.

The male capercaillie is nearly as large as a turkey, weighing from eight to twelve pounds; but the female is considerably smaller. The colour of the male is on the upper parts a chestnut brown, finely marked with blackish lines. The breast is glossy greenish black, passing into black on the under surface. In the female the head, neck, and back are marked with transverse bars of red and black, and the under surface is pale orange yellow barred with black. The pairing season of this species is early in the spring. "From February to the end of March the silence of the black and gloomy forest is broken by the voice of the male calling to his mates from some stump or branch, as soon as morning dawns, and before evening closes. With tail spread out, and quills lowered to the feet, the neck protruded, and the feathers of the head ruffled, he utters a cry not unlike the whetting of a scythe, but so loud as to be heard at a great distance, all the while throwing himself into strange attitudes, strutting and wheeling about with great stateliness. To the singular construction of the trachea or windpipe this loud and harsh-toned note is doubtless owing. This organ makes a loose fold of two curves before it enters the chest, so as to gain a great increase of length, and moreover is governed by a certain apparatus of muscles."

The loud call of the capercaillie or wood-grouse often leads to its destruction, bringing the sportsman to the spot, and who, concealed from observation, takes a fatal aim.

It is principally from Norway that the London poulterers are supplied with this noble bird.

The black-grouse is still found in the pine-woods of our island. It is common in the Highlands of Scotland, Northumberland, and some parts of Derbyshire, and occurs also in Hampshire and Surrey. "The bases of hills," says Selby, "heathy and mountainous districts, which are covered with a natural growth of birch, alder, and willow, and intersected by morasses clothed with long coarse herbage, as well as the deep wooded glens so frequently occurring in such extensive wastes, are the best suited to the habits of these birds, and most favourable to their increase." Their food consists of mountain-berries, the shoots of heath, fir, birch, and alder, together with grain. In manners this bird resembles the wood-grouse. The males associate in flocks during winter, but separate in March, each choosing a station from which he drives all rivals, not however without many contests for his territory. Each male mates with several females. The plumage is at this season of the richest lustre, and the skin over the eye of the deepest scarlet. The female, termed the Grey-hen, forms a loose nest under the shelter of a bush or tuft on the ground, and lays from six to eight eggs. Both the wood-grouse and the black-grouse resemble, in many particulars connected with their habits, the wild turkey of the forests of America.

The plate represents—the Capercaillie or Wood-grouse, the Red-grouse, the Black-grouse, the Ptarmigan, the Pheasant, the Quail, the Red-legged Partridge, and the common Partridge.

THE ISLANDS OF ENGLAND.

[Continued from page 407.]

ISLE OF WIGHT.

This is the third island in point of size, and the first probably in point of interest, among the Islands of England; but as this island has been pretty fully described in the 'Penny Magazine,' at pp. 337 and 377 of vol. v., a very brief notice need only be bestowed upon it.

It is situated off the coast of Hampshire, in the English Channel, of which county it forms a part. The strait which separates it is of unequal breadth, varying from one to seven miles; and the island itself is about twenty-one miles along by thirteen across,—the length ranging east and west, and the breadth north and south. The island is much frequented by strangers, both for the beauty of its scenery and the salubrity of its climate; and now that the Southampton Railroad has been opened, a journey from the metropolis to the Isle of Wight may be performed in five or six hours. Some portion of it is well cultivated and very fruitful; but there are tracts of high and bleak downs, which afford pasturage to considerable numbers of sheep. The principal towns are Newport, Cowes, Ryde, and Yarmouth; besides which there are several villages and places of less note.

PORTSEA ISLE.

This island is situated to the north of the Isle of

Wight. It is about six miles long from north to south, and about four miles across. A very narrow channel or creek, over which there is a stone bridge, separates it from the mainland on the north, and on the east it is bounded by Chichester Bay, and westward by the spacious harbour of Portsmouth. A very narrow channel at its south-eastern extremity separates it from Hayling Isle (which lies in Chichester Bay) on the east; and on the west it is divided from the mainland by the entrance into Portsmouth harbour, opposite to Gosport. The land of Portsea Isle generally lies low; but it is from the town of Portsmouth, on the south-western part of the island, the first naval sea-port in the United Kingdom, that it derives its chief claim to notice. Indeed it is more commonly looked upon as a peninsula than an island, from the nature of the narrow creek which separates it from the country which lies to the northward.

HAYLING ISLE.

This island lies east of Portsea, their southern extremities being separated from each other by a narrow opening leading into Chichester Bay. Like the former island, it is divided from the mainland by a narrow channel, and in size is nearly of similar dimensions. It contains nothing of peculiar interest, the land lying low, and the shores being generally marshy. There are two or three small villages on the island; and besides the employment that a portion of the inhabitants find in fishing, during the winter season, the reeds and shallow waters are frequented by large numbers of aquatic birds, which afford a source of amusement to the neighbouring sportsmen when other kinds of shooting fail, and a source of profit to the more needy part of the inhabitants.

THORNEY ISLE.

This is a much smaller island than Hayling, and lies in the same bay, but farther east, and nearer to the Sussex than the Hampshire coast. Its soil and general character are of the same nature with Hayling, but it is separated from the mainland by a broad channel. There is but one small village upon it, of the name of Thorney, where there is a small chapel for the use of the inhabitants. Fish and wild-fowl are, at particular seasons, very abundant in the vicinity of this small island, which is nearly two miles long by one broad.

ISLE OF THANET.

Continuing eastward along the English Channel, and so through the Straits of Dover, we meet with no other island until the north-eastern part of the county of Kent is reached, where is the Isle of Thanet. Though this small division of the county, which is nine or ten miles long, by six or seven wide, is denomited an island, it is in reality nothing of the sort, though geographers usually account it such. But having introduced a notice of it in this place, it may be as well to explain its pretensions to the name of island, and then leave the reader to judge of the applicability.

The Stour, a river of very moderate size, after passing Canterbury several miles, separates into two streams; the principal one, meandering through low marshy lands, falls into the sea below Sandwich, and the smaller branch, which takes the name of the Sair or Nethergoing, flows north, and falls into the sea at the village of Reculver. The rest of this tract of land is surrounded by the sea; but it surely is necessary that a more important separation should be present, in order to give to a section of country the character of island. Two very noted watering-places, namely, Margate and Ramsgate, are situated within this district, which is also noted for its crops of wheat. It stretches farther eastward than any other part of Kent, the North Foreland being its most easterly extremity.

SHEPPY ISLE.

This island, like Thanet, is not surrounded by the sea, and therefore the notice taken of it will be more brief. It likewise forms part of the county of Kent, lying a few miles north of the road from Rochester to Canterbury. It is about seven miles long and four wide; the soil for the most part is of a good quality. It is situated at the mouth of the Thames where the Medway falls into it; and it is an inferior branch of the latter river which cuts it off from the mainland, and gives to it some pretensions to be reckoned among the islands. This branch of the Medway is known by the name of the East Swale, and in some places is of considerable breadth, and throughout is acted upon by the flux and reflux of the tides; but nevertheless it is too narrow in some places to give to Sheppy the general features and characteristics of an island, though certainly more deserving of that appellation than the Isle of Thanet. The principal places it contains are Sheerness and Queenborough; the former occupying the north-western point of the island, where there is a government dockyard and other public works; while the latter is situated a little farther up the Medway, near to where the branch called the East Swale diverges from the main channel. There are some small marshy islands formed by other branch channels of the Medway, but none of an importance to deserve being enumerated among the islands of England.

(To be continued.)

Peasantry of the Pyrenees.—The peasants of the Pyrenees have all which their necessities demand within themselves. They grow their own flax, and one of their most busy occupations is to dress it. They do not steep it in water before beating it, as in England, but spread it on some sloping field or hill-side, where it undergoes no other process than what is effected by exposure to the weather. Not only is the flax prepared and woven for their own use, but the wool of the mountain sheep, undyed, is made into jackets, trowsers, and petticoats, as well as into various other articles of clothing. Thus supplied with the most common and necessary kinds of dress, their wants are equally simple as regards their furniture and food. A few brass or copper vessels, for their milk, are always used by those who make cheeses, as many of the peasants do, not only of the milk of cows, but of that of sheep and goats. For a churn they have a very simple substitute, being no other than a dried sheep's-skin. For keeping wine the skins of kids are frequently used, with the hair inside: and the same article is also converted into a large pocket or knapsack, which the little girls carry at their backs. The skin, when used in this manner, is kept entire, either the head or the tail of the animal being folded over the opening of the knapsack. All implements of husbandry used amongst the Bearnais are equally simple in their character. The pole of their little carts is often nothing more than the stem of a tree cut off where it has divided into two branches, so that the ends of the two forks connect with the axletree; and the forks with which their hay is made are branches, or stems of the same description, on a smaller scale. Their ploughing, such as it is, is effected by a sort of double process, requiring four oxen,—two to go before with the coulter, and two others with another implement to turn over the soil. Both these are generally conducted by women. For millet and buckwheat, which succeed immediately to the earliest crops, the soil is merely turned over with a shovel, after which the earth and stubble are burnt in heaps, and strewn upon the field. The process of preparing the ground for wheat and oats is simple in the extreme. Both the seed and the manure are strewn upon the land, ploughed in together, then harrowed, and all is finished. The labour of carrying and spreading manure is performed almost exclusively by women, who sometimes carry it on a sort of hurdle into the fields, but more frequently in sacks on their heads. In the valley d'Aspe it is taken to the fields in large woollen sacks placed upon the backs of donkeys.—*Summer and Winter in the Pyrenees, by Mrs Ellis.*



a, Wild Rabbits and Young; b, Hares and Leveret.

THE HARE AND THE RABBIT.

Few animals are better known than the hare and the rabbit, which, though closely allied to each other, and belonging to the Rodent order of quadrupeds, exhibit very different instincts and opposite modes of life. Both, in their natural state, are regarded as private property, at least in our island, and are protected from the unlicensed by the same laws as are the pheasant, partridge, and grouse. The hare (*Lepus timidus*) was one of the "beastis of venerye" among our chase-loving forefathers, and indeed it appears ever to have been regarded as "game," and hunted for the sake of the sport its pursuit affords. The earliest notice of hare-hunting is by Xenophon, in his 'Cynegeticus;' he there enters with evident feelings of pleasure into the details of the sport, and gives many observations on the animal's habits, with which he was clearly well acquainted.

The Romans, like ourselves, considered the flesh of the hare a delicacy. It would seem, however, that the ancient Britons abstained from it on religious

grounds, and we know that it was one of the forbidden meats among the Jews, and also among the Mohammedans.

Timid and defenceless, and surrounded by numerous enemies, exclusive of man, the hare is well endowed with the means of escape. It is both watchful and swift, and its brown fur assimilates in colour with the herbage amongst which it makes its "form."

The external characters of the hare are too well known to need any details: its senses of hearing and sight are very acute; its eyes are large and prominent; its ears very long; its hind limbs elongated, muscular, and formed for speed; its fur consists of hair of two kinds, one straight and of a yellow-brown colour, the other long, wavy, and tipped with black, giving a peculiar mottled appearance. The ears are tipped with black.

The hare is crepuscular and nocturnal in its habits. During the day it crouches in its "form," or habitual resting-place, which is sometimes a spot selected among fern and other herbage, sometimes among the underwood of a "preserve," and sometimes on the ground without other covering or concealment than is given by the unevenness and rough condition of the site. From this "form," a regular track is made by the animal to its adjacent feeding-grounds, for it goes and returns upon its own footsteps. Where hares are plentiful, their tracks leading from preserves to their usual evening haunts are so numerous and definite as to strike the eyes of the most unobservant, and the poacher is at once directed where to place his net or noose. It need not be said that the food of this animal consists exclusively of herbage. Young wheat often suffers extensively from the ravages of hares where numerous; indeed we have known fields of this grain, adjacent to extensive wooded preserves, totally ruined for the season by their nocturnal depredations. Plantations of young trees also are often greatly injured by their habit of gnawing the bark; and the farmer's garden, especially during hard winters, when food is scarce, is very liable to their invasion. At this part of the year hares scatter themselves abroad, and wander farther than during the summer; we have observed, besides, that they are then more diurnal, seeking their food even during the middle of the day; and we have surprised them busy among the culinary vegetables of the garden.

The hare is very playful. Often during a fine moonlight evening, have we, unobserved, been amused and delighted by watching a numerous assemblage of them gambolling and sporting with each other, in the exuberance of animal enjoyment. The least noise was sufficient to check them and render them still and attentive; our appearance would put them to instantaneous flight.

It has been noticed by several writers that the hare takes fearlessly to the water, and will swim well. Instances are recorded of its having resorted to the expedient of swimming across a pool to the shelter of rushes when the hunters' horn had alarmed it; and Mr. Yarrell (in Loudon's 'Magazine,' vol. v.) relates a circumstance, quoted by Mr. Bell, of a hare which came down from the hills to the sea-shore early in the morning, took the water at high tide, and swam to the nearest point of an island a mile distant from the mainland. We have ourselves known them to cross a broad stream, though we have not seen them in the act of swimming.

Wild and timid as this animal is, it is not unsusceptible of domestication. The poet Cowper, as is well known, kept tame hares. Borlase informs us ('Nat. Hist. of Cornwall') that a tame hare in his possession was so familiar as to feed from the hand; its ordinary retreat was under a chair in the parlour, but it would take food and exercise in the garden, returning always to the house. A greyhound and a spaniel were its companions, and the whole three played together, and at night often stretched together on the hearth. It is remarkable, however, that both the greyhound and spaniel were used in the field, and often went out secretly in pursuit of hares by themselves, though they never attempted to injure their playfellow and companion. Sonnini had a tame hare which lived with a hound and two Angora cats; and Dr. Townson had one as playful and familiar as a kitten. A person of our acquaintance had at different times two tame hares, both remarkable for their docility, but of very different tempers; one was very gentle, the other would resent any molestation by biting, which it did very severely, at the same time pertinaciously following up its attack. Cowper's male hare, when annoyed by the cat, would drum upon her back so violently with his fore paws as to compel her to escape and hide herself.

The hare breeds when about a year old, and produces three broods in the course of the spring and summer; but the males and females do not pair nor form permanent associations. The female, after about thirty days' gestation, brings forth from three to five young. These are born covered with fur and with the eyes open, and in less than a month leave their parent and trust to themselves. Leverets, as the young are termed, are peculiarly liable to destruction, and one of their most dangerous foes is the weasel, at the sight of which the helpless creatures seem paralysed with fear. Many instances have occurred in which the weasel has been killed in the act of draining the life-blood from the neck of his victim. The wiles and doubles of the hare, when chased by dogs, are so well known and so often noticed, that we need not here detail them; the more especially as we cannot help connecting them with the fear and agony it experiences while straining every nerve, and using every artifice to escape its pursuers.

The fur of this animal is valuable, and the market is supplied not only with skins collected in our island, but with others imported in abundance from the Continent. The hare is found in our island and throughout Europe, as well as in many parts of Asia. Mr. M'Clelland states that it occurs in Assam, but of degenerate size, measuring only from seventeen to nineteen inches in length (instead of twenty-one inches). "It is not esteemed as an article of food; the ears are more uniformly grey than in the European variety" ('Proc. Zool. Soc.,' 1839, p. 152). We suspect the Assam hare here noticed to be a distinct species. We may here remark that the common hare of Ireland, indeed the only hare found there, is specifically different from the English species, *Lepus timidus*, and it is remarkable that its distinctness was not recognised till the year 1833.

"In the year 1833 the Earl of Derby, then Lord Stanley, and president of the Linnæan Society, sent to that Society a specimen of the hare of Ireland, which his Lordship had obtained at Liverpool." This specimen was described by Mr. Yarrell, who subsequently had opportunities of examining others. In the 'Proc. Zool. Soc.,' July, 1833, p. 88, the following passage occurs:—"A specimen was exhibited of the Irish hare recently presented to the Society by Mr. Yarrell, who pointed out the characters by which it is distinguished from the common hare of England and the Continent of Europe. Its head is shorter and more rounded; its ears still shorter than its head; and its limbs less lengthened. The fur also differs essentially from that of the common hare, and is useless as an article of trade.*"

* This species (*Lepus Hibernicus*, Bell; in 'British

Quadrupeds') is somewhat larger than our English hare, with a very short head and very short ears; a uniform soft fur, and comparatively short hind limbs, which do not much exceed the fore limbs in length. That it is a distinct species no one can doubt who has compared it with its English relative, as we ourselves have done repeatedly. There is yet another very distinct species within the limits of our Islands; we allude to the Alpine or varying hare (*Lepus variabilis*). This species is common in the mountain districts of Sweden, Norway, Lapland, and Kamtchatka. It is found in the Alps, and it occurs in the northern parts of Scotland, and is sometimes seen on the mountains of Cumberland. The Alpine hare is intermediate in size between the rabbit and the English hare. In Sutherlandshire and other parts of the Scottish highlands it tenants the summits of the mountains, hiding in the clefts of rocks or among rocky fragments. During the winter lichen is its staple food. At this season it descends to a lower and less exposed station; and its fur, gradually losing the light fulvous-grey of summer, becomes of a snowy white, the tips of its ears (which are shorter than the head) remaining black. Thus, then, we have three distinct species of hare within the limits of the British Islands, namely, the common hare, the Irish hare, and the Alpine hare,—of which, as respects external characters, the two latter more nearly resemble each other than they do the former.

From the hare let us turn to its ally the rabbit (*Lepus Cuniculus*, Linn.). Size excepted, the rabbit closely resembles the hare in all its principal characters. It may, however, be at once distinguished by the comparative shortness of the head and ears, as well as of the hinder limbs; the absence of a black tip to the ears; and by the brown colour of the upper surface of the tail. Its habits and general economy are totally opposite to those of the hare: and its flesh, instead of being dark and highly flavoured, is white, and, though delicate, somewhat insipid, especially that of the tame breed. The flesh of the latter is indeed preferred by some, but we agree with M. Ude in thinking it very inferior.

It would appear that the rabbit is not an aboriginal of our Island, but the date of its introduction is unknown. In the year 1309, at the installation feast of the Abbot of St. Austin's, six hundred of these animals were provided, at the then great cost of 15*l.*; the price of each, sixpence, being that of a pig. It is generally believed that the rabbit was first introduced into Spain from Africa by the Romans, whence it gradually spread, naturalising itself in temperate climates.

This animal is eminently gregarious; and, as is well known, makes extensive burrows, in which it habitually dwells and rears its young. Sandy soils, with a superficial layer of fine vegetable mould clothed with thyme, fine grass, and other herbage, which at the same time afford food and are easily mined, are favourable spots for the increase of the rabbit. They delight in steep sandbanks overhung with brushwood and furze; and we have remarked that when the old red sandstone crops out and is rendered friable, or somewhat decomposed by the action of the atmospheric elements, rabbits are very numerous, burrowing with great facility. They abound also in woods, especially such as clothe the declivities of hills, whence, like the hare, they make incursions into the adjacent corn-lands. A rabbit-warren, that is, a wide sandy heath, or extensive common, devoted to their increase and feeding, when visited at the close of day or by moonlight, affords an amusing spectacle. Hundreds may be seen of all sizes, gambolling and sporting, and chasing each other with astonishing rapidity. When alarmed, they take to their burrows, disappearing as if by magic.

The fecundity of the rabbit is very great. The female is capable of breeding at six months old; and four or five litters, each litter consisting of about five young, are annually produced. We have stated that the hare produces her young clothed, capable of seeing, and soon in a condition to shift for themselves. With the rabbit circumstances are widely different. The young are born blind and naked, and totally helpless. The female forms a separate burrow, at the bottom of which she makes a nest of dried grass, lining it with fur taken from her own body. In this nest she deposits her young, carefully covering them over every time she leaves them. It is not until the tenth or twelfth day that the young are able to see; nor do they leave the burrow till four or five weeks old. The precaution of forming a separate burrow, the entrance of which is concealed, has induced the belief that the male parent will destroy the young, should he chance to discover them. This, however, is not probable. We know indeed that the female domestic rabbit will often devour her offspring, if molested at an early period, urged by the instinctive solicitude for their welfare taking a morbid and unnatural direction; and we believe that the domestic male is apt to destroy them—but from facts like these we can form no safe deductions as to the propensities of the animals in a state of nature. Wild rabbits, for example, pair—a male and female uniting together; but in a state of domestication this instinct is lost.

The rapid multiplication of the rabbit would soon render it, as Mr. Bell observes, one of the greatest scourges of our agriculture, were its destruction not effected by wholesale. It is the prey of the weasel, the stoat, the polecat, the hawk, and the owl; and man, though he protects it, thins its numbers, both for the sake of its flesh and fur. With respect to the latter, the home supply is by no means adequate to the demand, and, as is the case with the skins of the hare, thousands are annually imported from Germany and other parts of the Continent, where myriads of rabbits are bred for this purpose.

In some notes on the 'Mammalia of Ireland,' by W. Thompson, Esq., vice-president of the Nat. Hist. Soc. Belfast ('Proc. Zool. Soc.,' 1837, p. 52), it is stated that "persons who take rabbits in the north of Ireland distinguish two kinds; the one they call the *burrow*-rabbit, the other the *bush*-rabbit. The meaning of the former term is obvious; but of the latter it may be stated that the animal is so designated in consequence of having a *form* like the hare, which is generally placed in bushes or underwood." Something like this we have ourselves observed, though we believe there are not two species. We have in certain parts of England known rabbits solitary (instead of gregarious), and thinly scattered about the steeps of rocky moorlands, crouching under bushes, or among fragments of rock, and having no burrow, which, indeed, in the deep peat would be difficult of excavation, as this is oozy and boggy. In adjacent spots, where the ground permitted it, their burrows were numerous.

Though the rabbit is not capable of the exertion of the hare, it is nevertheless very swift for a short distance; and, as we know by experience, when crossing a path in the woods at full speed is not easily hit by the sportsman. From this circumstance rabbit-shooting is with some a favourite sport, as it serves to display their skill. The usual way of taking rabbits for sale is by ferrets and nets, or by traps of various construction.

The wild rabbit is undoubtedly the origin of our various domestic breeds. Tame rabbits indeed easily resume their natural state of freedom, and return to their instinctive habits. Albinoes are common in a state of domestication, and it often happens that one or two appear in a litter when neither of the parents are

so. Domestic rabbits are not unfrequently fierce: we had a male of the Angora breed, which would fearlessly attack any cat, and always come off victorious. We once saw it lacerate a large cat in a cruel manner with its sharp incisors.

The wild rabbit is about sixteen inches in the length of the head and body, but some of our domestic breeds nearly equal a hare in magnitude. Our sketch represents two hares and a leveret in the foreground, and a group of rabbits beyond.

THE ISLANDS OF ENGLAND

[Concluded from page 416.]

CANVEY ISLAND, FOULNESS ISLAND, MERSEY ISLAND, HORSEY ISLAND, &c.

PROCEEDING to the northward of the river Thames, along the south-eastern district of Essex, there are many low and marshy islands, the principal of which however are named as above.

Canvey Island is situated on the north side of the Thames, midway between Gravesend and Southend; and although five miles long and two miles broad, being merely separated from the mainland, which like itself is low and marshy, by a creek, few persons navigating the river Thames are aware of this being an island, as it presents no such appearance from the main channel of that river: it, like marsh land in general, is mostly devoted to pasturage.

There are several low and swampy islands where the river Crouch disembogues into the sea, the principal of which are *Foulness* and *Wallasea*, the former of which is five miles long and from two to three wide, contains a church, and is divided into two parishes. The creeks and pits connected with the river Crouch, and also the river Blackwater, which forms an estuary that runs as far inland as Malden, yield considerable quantities of oysters.

Mersey Island is nearly as large as Foulness, and is situated ten miles south of Colchester, and between the rivers Blackwater and Coln. It contains two villages, East and West Mersey, whose inhabitants are principally engaged in the oyster fishery. There are two or three smaller islands farther up the estuary of the Blackwater, the largest of which are Northey and Osey. The oysters brought to the London market from the various creeks and banks in the neighbourhood are sold under the name of Colchester oysters.

Horsey Island is situated in a small gulf or inlet, about seven miles south of Harwich. Its situation from the sea may be known by the Walton tower or Naze lighthouse, which stands on the shore of the mainland, two miles east of Horsey Island. There are some other small islands in the same inlet, separated from each other by narrow shallow channels. It may here be observed, that it is entirely owing to the low situation of the south-eastern portion of Essex, and the want of a greater fall in the waters of the various sluggish streams and rivers, that we find so many islands formed in the vicinity of their mouths or communications with the sea; and here, as is usually the case on the coast of low lands of this description, sand and mud banks extend to a distance from the shore, which render the navigation both difficult and dangerous.

From the Essex coast northward there is no detached land met with that deserves the appellation of island, until arriving at the mouth of the river Tees, which separates Yorkshire from the county of Durham; and even then the only low plot of barren ground within the mouth of that river, between the villages of Salt Holme and Seaton Snook, and at high water separated from the north or Durham side of the river by a channel of several hundred yards in breadth; and although in reality an island, it commonly goes by the name of the Salt Holmes, or the Salt Marshes; and except that it serves to impede the navigation of this part of the river, it is a place of little or no importance.

COQUET ISLE.

This is a small island lying a couple of miles east of the mouth of the Coquet river, off the coast of Northumberland. In its greatest extent it is scarcely over half a mile; but it is surrounded by deep water, and some parts of it are elevated to a considerable height above the sea. There are, however, dangerous clusters of rocks, both on the north and south of the mouth of the Coquet river, and hence vessels navigating this part of the coast rarely attempt to find a passage between the mainland and the island; but a lighthouse has been recently erected for the safety of mariners.

Near the village of Warkworth, at a short distance from the mouth of the river, is Warkworth hermitage, consisting of three separate rooms cut out of the solid rock, a work of immense labour for the hands of a solitary recluse. This romantic place is visited by numerous strangers, from whence an excursion is commonly made to Coquet Isle, where there still are the remains of some ancient walls of a building supposed to have been in some way connected with the original occupier of the lonely hermitage.

THE FARNE ISLANDS, WITH HOLY ISLAND, OR LANDISFARN.

These islands have already been described in the 'Penny Magazine;' the former in No. 586 of the new series, and Landisfarn at page 282 of vol. vi. They, like Coquet Island, lie off the coast of Northumberland, in the North Sea; and, like most of that coast, are of a rugged and rocky character; and the Farne Islands in particular, from their distance from the shore, and the dangerous rocks in their vicinity, render the navigation of this portion of the coast both difficult and perilous.

The circuit of England is complete with this brief notice of Holy Island; we commenced with the Isle of Man, situated in the Irish Sea, and opposite to the southern part of the west coast of Cumberland; and having traced our progress southward, and then eastward, and lastly northward, have, on reaching Holy Island, done all that we proposed at the outset, that is, given a short sketch of all the Islands of England; for although there are clusters of rocks among the few miles of English coast northward of Holy Island, they are but mere rocks, and hence do not properly come under the denomination of islands; nor have we omitted, we believe, any name of importance, but have included all that from size or otherwise appeared worthy of attention.

Valley of Cashmere.—How different was the aspect of a village viewed from a distance, and when I entered it. The noble groups of palms, poplars, and fruit-trees; the curious mosque, with its quaint alleys and flower-garden, where the chrysanthemum and tagetes were in full bloom, notwithstanding the lateness of the autumn; the whole scene surrounded with verdant meadows, through which ran a brook with its water-mill, and rows of willows planted along its banks;—such objects as these would lend to the villages a friendly and hospitable look. But in place of this lovely exterior, how mournful a spectacle would frequently meet my eye as I rode into the place. Then all was life; now all death: the mill-wheel stood still, many of the houses were ruinous, while others, with doors and windows open, offered a refuge only to the wild beast. In many a hamlet there was not a mortal to be found, with the exception of an old fed-up Fakir, squatted at the entrance of a mosque, or a Brahmin wasted to a skeleton, conning prayers out of his Veda. The first would rise, screech out *Allaho-Ackbar*, and importune for alms, while the other continued to bear his far greater misery with uncomplaining resignation.—*Hugel's Travels in Cashmere: from Foreign Quarterly Review.*



[V. Greatrakes.—From a portrait prefixed to his account of himself.]

VALENTINE GREATRAKES.

The desire to escape from pain has led mankind, in all ages, to adopt, without sufficient investigation, any means which promised to effect a cure, or to give relief in the most certain and speedy manner. From sacrifices to pagan gods, to gifts to witches, no absurdity has been too great to be adopted; but as the knowledge attendant upon civilization extends, credulity must be acted upon by means less rude, and more in accordance with the position and ideas of society. While in England the shrines of saints are altogether abandoned, in some parts of the Continent their beneficial powers are still confided in, and many well-attested cases are continually published of diseases cured by visiting such places, as is asserted; of such cases there is never any want, whatever be the means proposed for securing a restoration to health, from the affidavits of the common quack, to the exhibitions of the scientific believers in the wonders of animal magnetism. In all cases alike, however, the effects which it is acknowledged are actually produced, are no doubt the results of a powerful action of the imagination, sometimes assisted by accidental circumstances.

Among the disorders particularly subject to the influence of a charm, the most common in England were the king's evil and the ague. Every old woman had a charm for the ague, and in rural districts there are some yet existing; but the more serious evil was only to be remedied by the hand of the sovereign, and hence its name. This power was exercised with much ceremony, a special prayer being provided for it in the Liturgy, till the extinction of the Stuart family. Dr. Johnson, when a child, was touched for that disorder by Queen Anne; and Charles Edward, though only pretending to be Prince of Wales, exercised the power effectually at Holyrood House, in October, 1745. That in many cases persons recovered their health after this process, is not contested, but not so as to the power by which they were effected: at an earlier period it was attributed to the high sanctity vested in the kingly office; by others, to a direct miraculous interference of the Deity; by others, with ourselves, to the influence of the imagination; and recently it has been connected with the phenomena of animal magnetism, and this connection is certainly established to a large extent by the cures recorded to have been performed by Valentine Greatrakes,* who assumed to have become possessed of the power of *touching*, which had hitherto been the prerogative of the sovereign alone.

From his own statement, Valentine Greatrakes (or Gratrax) was a native of Ireland, being born in 1628, at Affane, in the county of Waterford. Having received a decent education at home, he was sent, when about the age of thirteen, to the university of Dublin. Here he remained but a very short time, as the death of his father, and the breaking out of the Irish rebellion in 1641, forced his mother, with the rest of the family, to seek refuge in England. Young Greatrakes continued to live with the family in Cheshire for about six years, when he resolved to return to Ireland, "to recover," as he says himself, in a work to which we shall have occasion to refer more fully hereafter, "the fallen fortunes of my house." He found affairs in such confusion, that he retired to the castle of Capoquin, and "spent a year's time in contemplation..... My soul was as weary of this habitation of clay as ever the galley-slave was of the oar." This love of solitude never entirely left him, and appears to have laid

* Greatrakes is cited as an important instance of the possession and use of animal magnetism, in the second volume of the 'History of Animal Magnetism,' by M. Deleuze

the foundation for the enthusiasm that afterwards developed itself. He subsequently held a commission under the Parliamentarians in Lord Broghill's regiment, and served till they were disbanded in 1656, when he retired to his patrimony, which he seems to have nearly entirely recovered, married, was appointed a magistrate, and filled other official situations. On the Restoration he was deprived of all his offices, and his want of employment probably reproduced his habits of contemplation, and in 1662 he began to feel a sort of impulse or inspiration within him that he could cure diseases by the touch. An accidental case of a scrofulous person applying to his wife as the Lady Bountiful of the village, enabled him to test his belief. In a few days a large tumour burst, discharged itself, and was healed, by the application of his hands; a result not very wonderful, if the tumour had arrived at a proper state. Numerous cases now followed in rapid succession, till at length, about three years later, an epidemic fever broke out in his neighbourhood, and he believed himself called upon to visit the sufferers: he did so, and cured a great number of them. From this time he undertook the cure of all sorts of diseases, and no longer restricted his practice to the king's evil or scrofula. This affair occasioned his being cited into the ecclesiastical court of Lismore, for having pretended to act by the inspiration of the Holy Spirit. This was denied by Greatrakes; but vexation at the process, and an invitation from his old commander Lord Broghill, now Earl of Orrery, to come to London to undertake the cure of the Countess Conway, determined him, in 1666, to quit Ireland. His reputation had preceded him in London, and his reception was extraordinary: Charles II. received him at Whitehall, but his pretensions do not appear to have been admitted or believed in by the court. He now visited the hospitals every day, and is said to have cured many.

Such pretensions did not, of course, remain unnoticed by the press. In the same year, 1666, he was attacked by an anonymous writer, now said to be a Dr. Lobb, a physician of some eminence. In this book, called 'Wonders no Miracles,' Dr. Lobb makes the same objections to the process which were afterwards made against the early uses of animal magnetism, asserting that many of the patients, probably those unrelieved, made "horrid complaints of his indecent and intolerable handlings of all their parts." The book is abusive in its style, and by no means remarkable either for fulness of facts or closeness of reasoning. He accuses Greatrakes of extortion, asserts that "all that he doth is by raising people's imagination;" that "accidents may perform many of his slight cures, and yet he have the credit of it;" that he pretended to derive his power from a voice from heaven; and imputes to him the having made a wound in a man's knee which he did not cure, and which had nearly occasioned the loss of the limb.

Greatrakes's defence, the work to which we have already alluded, was written in reply to this attack. It is entitled 'Valentine Greatrakes' Great and Strange Cures, in a Letter from Himself to the Hon. R. Boyle,' Lond., 1666; and in it he indignantly repudiates the call from heaven, and produces a certificate from the then Bishop of Chester, who says, "The letter which I received from him had no such passages savouring of fanaticism as a pretended voice from heaven and a vision do import." His defence as to the man's leg is curious, and shows, as well as others of his cases, that he used both surgery and medicine as auxiliaries. He says:—"I made a small incision a little above the pan of the knee (as I take it), which was full of small concreted juices like measles; and it may be, as it is usual (where there is any humour), that the place where the orifice was did swell, grow red and fiery, as it must consequently before the tumour comes to a suppuration (which, in laying my hands of it, and spitting thereon, would, as it is usual, immediately have ceased);" and then goes on to deny the gangrene and danger to the limb, appealing to a statement attested to have come from the man himself, with whom he had also been accused of tampering: if he did so, he does not seem to have been very successful, as the man, even by the report of the partial reporter, only denies having used some strong terms of reproach towards Greatrakes; "but when Mr. Greatrakes told him that he doubted not but to allay the inflammation with his hand, the said person desires Mr. G. to excuse him, for the doctor and surgeon had been with him, and applied medicaments unto him; and he durst not take them off, for fear of their displeasure," &c. (p. 14).

But though Greatrakes declines acknowledging a direct miracle in endowing him with his extraordinary power, yet he attributes it not to the temperature of his body, but to the gift of God; for which he gives as a proof, that "before the time of his first receiving the impulse, when, having been afflicted with violent headaches for many years, he had put his hand to his head a thousand times without producing any effect, but now when so troubled, he no sooner puts his hand to his head, but the pain is removed and run out." He also adds, "There are some pains which afflict men after the manner of evil spirits, which kind of pains cannot endure my hand, nay, not even my glove, but fly immediately, though six or eight coats and cloaks be put betwixt the patient's body and my hand" (p. 32); another close approximation to the wonders of Mesmerism.

To this work is affixed an Appendix of certificates of cases occupying fifty pages of small quarto, attested by numerous respectable witnesses, among whom we may mention the Hon. R. Boyle, the natural philosopher, Dr. Ralph Cudworth, the acute metaphysician, Andrew Marvell, the witty and clear-sighted patriot, Dr. Wilkins, and Bishop Patrick. Marvell signs two certificates in one day (April 10, 1666), of cures effected on Dorothy Pocock of a tumour in the breast as large as a pullet's egg, by twice stroking, and of Mr. Nicholson of Cambridge, whose general soreness and pains in the body were "run out" by a similar application. "Some remarks written in the fly-leaf of a copy we have seen (says a writer in the 'Penny Cyclopædia,' vol. v., article 'Robert Boyle') will make a good *resumé* of the evidence:—'In looking over the cases stated in this pamphlet, attested as they are by the most learned and philosophical individuals of that period, it is impossible to deny the existence of the facts as attested, without rejecting *in toto* the evidence of every historical record. Credulity may have distorted and exaggerated the reality, as witnessed by such men even as Boyle, Cudworth, Wilkins, Patrick, &c.; but doubtless the facts are essentially true as reported, and as certainly to be accounted for on the principle of mental and physical sympathy, the imagination of the patient being wrought upon by the powerful emotions excited by expectation. Half a hundred works of the most philosophical and scientific physicians might be cited in confirmation of the astonishing effects of that agitating excitement of the nervous system produced by operating upon the imagination; which perfectly explains all the wonders of animal magnetism.'"

Nor were advocates wanting in his defence. The learned G. H. Stubbes, in a little work called the 'Miraculous Conformist,' pours out an immense deal of quotation from classical and Scriptural sources to prove that similar wonders have been witnessed before, and may therefore be believed now. He describes Greatrakes as a "man of graceful personage and presence;" says in his cures he uses "no charms—no unlawful words," but attributes his power to the temperature of his

body, or, as he himself styles it, "a ferment implanted in his (Greatrakes') body." It is curious to observe a learned man deceiving himself by the use of mere words, without one exact idea, as in the following passage, by which he probably persuaded himself into the credibility of Greatrakes' pretensions:—"One may conceive how, upon the efficacious touch of Mr. Greatrakes, he resuscitating the blood and innate temperarure, the morbifique ferment may be ejected, and the remaining gross body, by a transposition of its texture, and a new impregnation of vitality, be re-imbibed into the blood, and become nutritious" (p. 20).

Unlike Mesmer and some other later pretenders, Greatrakes is favourably distinguished by his disinterestedness. He took no money, and the accusation of extortion only amounts to large sums having been expended by persons coming from great distances without receiving any benefit; and even the attention he attracted by his pretensions seems to have been offensive to his habits of seclusion and contemplation. He therefore returned to Ireland in 1667, where he was still living in 1680, but the time of his death is unknown. There is no record of his having exercised his gift after his return to private life, but it is probable that he did do so among his poorer neighbours, for all the statements unite in attributing to him great benevolence, while he refused money and avoided fame. Thus actuated by none of the common stimulants which produce or foster similar pretensions in general, he departed, leaving his gift to be succeeded by some other pretension more novel though not more probable, to be again believed in by a public still credulous though continually deceived.

THE LAC INSECT, AND ITS PRODUCE.

There is a substance of frequent use in the arts, the nature and source of which are but little known even to those who use it—we mean *lac*.

Lac is a compound substance—sometimes called a gum, but erroneously, for it is neither a gum nor a resin—prepared by the female of a minute insect, known by the several names of the *coccus ficus*, *coccus lacca*, and *chermes lacca*. These insects are found on several species of trees in and near the East Indies, by which they appear to be nourished, and to the succulent extremities of the young branches of which they affix themselves. Around their edges they are environed by a tenacious semi-pellucid liquid, which seems to glue them to the branch; and it is the gradual accumulation of this liquid, forming a complete cell for each insect, which produces the substance called *gum-lac*. When the cells are formed, the insect has the appearance of an oval, smooth, red bag, without life, about the size of a small cochineal insect, and full of a beautiful red liquid. When the eggs are hatched within the cell, the young insects, after feeding upon and consuming this red liquid, pierce a hole through the cell, and issue forth to open day one by one, leaving a white membranous substance in the cell. The lac thus appears to furnish a kind of nest or dwelling for the young insects in their earliest state.

Dr. Roxburgh once had some small branches of the *mimosa cinerea* given to him, on which were some pieces of very fresh-looking lac; and he carefully watched the processes which ensued. At the end of fourteen days, he observed myriads of exceedingly minute animals creeping about the lac, and more still issuing from small holes over the surface of the cells. The insects, when single, ran about pretty briskly; but in general they are so numerous as to be crowded over one another. On opening the cells, he found that the substance of which they were formed bore much resemblance to amber; the external covering was remarkably strong and resisting, but the partitions between the cells were thinner. The cells were in general irregular squares, pentagons, and hexagons, about an eighth of an inch in diameter, and a quarter deep; and no communication existed from one to another. The cells which were opened during the issue of the minute insects seemed to be occupied in two different ways. One half of each cell contained a small bag filled with a thick red jelly-like liquor, replete with what Dr. Roxburgh considered to be eggs; the bag adhered to the bottom of the cell, and had two necks, which passed through perforations in the external coat of the cell. The other half of each cell had a distinct opening, and contained a white substance like a few filaments of cotton rolled together, and also numbers of the insects themselves ready to make their exit. On the following day the insects continued issuing from their cells in great numbers, of a deepened red colour, and more lively in their movements than those before observed. The insects were contained in a wide-mouthed bottle, and small twigs of the *mimosa* and other trees were put in the bottle with them; and on the third day small winged insects were seen to issue from the lac, evidently forcing for themselves a passage with some struggling.

The lac of which the cells are formed thus seems to be a residue which, after serving as a nest for the young, is left as valueless by the insects. In a commercial point of view there are four sorts of lacs, but all are derived from these cells. In the first place there is the *stick-lac*, which is the lac in its natural state, obtained in pretty considerable lumps, with much of the woody parts of the branches on which it is formed adhering to it; secondly, the *seed-lac* is a collection of granules, obtained from the former after the colouring-matter has been extracted by water; *lump-lac* is the seed-lac after it has been purified by fire, and formed into cakes; lastly, *shell-lac* is the purified lac, or the cells liquefied, strained, and formed into transparent laminæ.

The stick-lac is collected in Eastern countries twice a year; and the only trouble in procuring it is in breaking down the leaves and branches, and carrying them to market. When the twigs or sticks are large, or only partially covered, the lac is frequently separated from them to lessen the expense of freight to Europe. The shell-lac is produced from this crude material by the following processes: It is broken into small pieces, picked from the branches and sticks, and put into a sort of canvas bag or tube, about four feet long and six inches in circumference. Two of these bags are in constant use, and each of them is held by two men. The bag is placed over a fire, and frequently turned, till the lac is liquid enough to pass through its pores, when it is taken off the fire, and squeezed by two men in different directions, dragging it along the convex part of a plantain-tree prepared for the purpose. While this is doing, the other bag is being heated, to be treated in the same manner. The dragging of the bags over the surface of the plantain-tree has the effect of depositing a layer of the melted lac upon it; and the thickness of this layer depends on the degree of pressure exerted on the bag. The fineness of the resulting shell-lac depends on the fineness or porosity of the bag through which it is strained.

The native Indians employ *lac* in a great variety of ways, as a material for ornaments, as a varnish, and as a dye. They use the lump-lac in making *bangles*, or ornaments in the form of rings, for the arms of the lower class of females; the best shell-lac being used in manufacturing these ornaments for the superior classes; as also beads, spiral and linked chains for necklaces, and other ornaments. As a varnish, the lac

is used in a curious manner: it is first formed by melting small pieces together into sticks, something like our sealing-wax, which are coloured with cinnabar or any other pigment. The box, cabinet, or piece of wood which is to be varnished is heated by means of a charcoal fire, and then rubbed over with a stick of lac; the smooth regularity of the lac being ensured by rubbing it over with a piece of folded plantain-leaf. Ornamental figures are frequently formed of coloured lac drawn over the heated surface of the article to be ornamented. In ornamenting their images and religious houses, the Hindoos frequently make use of very thin beaten lead, which they colour with various varnishes made of coloured lac; the leaf of lead is laid upon a smooth iron heated from below while the varnish is being spread on it.

Lac is sometimes curiously applied in the making of the polishing grindstones used by the lapidaries of the East. The natives take three parts of river sand to one of seed-lac, mix them in a vessel over a fire, and form the mass into the shape of a grindstone. A square hole being made in the centre of the grindstone, it is fixed on an axis; and by warming the surface of the lac, the grindstone may be brought to a right form. The grindstones vary in the proportion and quality of the sand mixed with the lac, according as they are to be employed for cutting or for polishing. It will be evident that the lac here plays no other part than that of a cement whereby the particles of sand are combined into a solid substance.

When stick-lac is reduced to powder, and water is poured on it, the liquid immediately begins to be tinged with red, and the addition of heat produces a deep-coloured crimson solution. This colouring substance is the source of much of the value which attaches to lac; and enables it to be used both as a coloured pigment and as a dye by the natives of India. The colouring-matter, which is extracted in various ways, is formed for sale into small square cakes or pieces, like those of indigo, which obtain the name of lac-dye, lac-lake, or cake-lake. These cakes when broken appear dark-coloured, shining, smooth, and compact, and when scraped or powdered present a bright red colour, approaching to that of carmine. The seed-lac and the lump-lac are less used as a colouring than as a kind of varnish, for they consist principally of the resinous portions left after the colouring-matter has been obtained. Mr. Kerr describes the mode of native dyeing with the lac-dye as follows:—They take one gallon of the red liquid; and add to it three ounces of alum. Three or four ounces of tamarinds are boiled in a gallon of water, and strained. Equal parts of the red liquid and of the tamarind-water are then mixed over a brisk fire; and the pieces of silk or cotton-cloth to be dyed are dipped and wrung alternately, until they have received a proper quantity of the dye. To increase the colour, they increase the proportion of the red liquid, and lengthen the time during which the cloth remains immersed in it. To render the colour binding in the silk, a handful of the bark called "load" is boiled in a little water, and the silk dipped in the decoction several times.

It is partly as a dye and partly as a varnish that lac comes to this country; the latter being used in the manufacture of some kinds of liquid varnish, in the manufacture of the best sealing-wax, and, within the last few years, in the hat manufacture. As a dye, the colour given by lac is less beautiful, but more durable than that given by cochineal. Some persons have recommended its adoption as a vehicle for colours in painting, for which it appears to have certain favourable qualities.

Mr. Crawfurd says, "The lac insect exists in most of the forests of the Indian Islands, but especially in those of Sumatra and the Malayan Peninsula. Its produce is however inferior to that of Bengal, and especially of Pegu, which countries chiefly supply the large consumption of the market of China, while the lac of the Indian Islands is principally confined to home consumption." Mr. Milburn states that it is produced on the cultivated mountains on both sides of the Ganges, in such abundance, that were the consumption ten times greater than it is, the markets might be supplied.

Phosphoric Lichens.—Several varieties of lichens, particularly the *subcorticalis*, the *subterranea*, and the *phosphorea*, are occasionally phosphorescent, and are more or less luminous in the dark. They often spread themselves to a great extent in caverns and mines, where they create an extraordinary degree of splendour. It is said that these lichens are so abundant and yield so much light in the coal-mines in the vicinity of Dresden, as at first to dazzle the eyes of the beholder.—*M. Erdman.*

Balsas of Peru.—As the heavy surf occasioned by the swell of the Pacific renders landing with boats always dangerous, and often impracticable, *balsas* are used along this coast. These balsas differ in materials and form on the different parts of the coast. In Chile and the southern coast of Peru, the balsa is a kind of sea-balloon, consisting of seal-skins made air-tight, and inflated like a bladder: they are so light that they float over the heaviest surf without danger. Two of these bladders are fastened together, and a sort of platform made of cane is fixed on them. These balsas hold from two to three persons. The balsa of the northern coast of Peru is a raft consisting of nine logs of the cabbage-palm secured together by lashings, with a platform raised about two feet, on which the goods are placed. They are employed for coasting along the shore, and have a lug-sail, which is most used in landing. The wind being along the shore enables them to run through the surf and on the beach with ease and safety. At Lambayeque, where the surf is very heavy, a kind of balsa is used called *caballito*: it consists of bundles of reeds fastened together and turned up at the bow. Being very light, it is thrown on the top of the surf upon the beach, and the fishermen who use them jump off and carry them on their shoulders to their huts. It seems that each bay or road has its peculiar balsa.—*Penny Cyclopædia.*

Steppes of the Ukraine.—The uniformity of the landscape is well calculated to weary the traveller, more particularly such a traveller as my companion, who had explored nearly all the steppes of the vast Russian empire; but, for my part, I found the journey anything but tedious. The consciousness that I had at length reached the genuine steppe, the scene of so many yet unexplained movements of the human race, was alone sufficient to keep my mind in an agreeable state of excitement. These boundless grassy plains, on which blade succeeds to blade for hundreds of leagues, and on which a calf may eat his way from the base of the Carpathian Mountains, till he arrive a well fattened ox at the foot of the great Chinese wall, afforded a never-ending theme for my imagination. I was never tired of contemplating the countless herds of oxen and wild horses, and the flocks of fat-tailed sheep. Even the vast extent, the apparent endlessness of the steppes was to me a source of pleasurable fancy. The horses gallop away, and the carriage rolls lightly over the ground, yet we seem never to stir from the spot. On we fly, yet all around remains unchanged. The optical illusions, also, that frequently present themselves, contribute not a little to the traveller's amusement. Sometimes a solitary figure, a man or an ox, will present itself on the edge of the horizon, as a huge spectral form, as though it were raised on stilts of enormous dimensions, or floated unsupported through the air. The appearance of lakes and large masses of water presented at times so complete an illusion, we could scarcely persuade ourselves that we did not behold some wide-spreading inundation before us. More particularly when there happened to be herds of cattle near, for the legs of the cows seemed to disappear in the water. *Ettot tolko ot sointse, tak pokasivayet* (it is the sun makes it look so; it is no real water), said our postilion, and he went on to assure us that the cattle were never led astray by the appearance of a mirage, which, by the scent alone, they were able to distinguish from real water.—*Kohl's Travels in Southern Russia; from the Foreign Quarterly Review.*

GRATUITOUS EXHIBITIONS.

THE CARTOONS AT HAMPTON COURT.

(Concluded from p. 38[illegible].)



[Death of Ananias.]

THE next of the Cartoons undertakes to portray the terrible judgment of God upon the first HYPOCRITE whose name occurs in the history of the Christian Church.

After the splendid miracle which the last of our Cartoons recorded, the doctrines of Christ continued, through the preaching of the Apostles, to make very rapid progress in Jerusalem; and already Christ's own prediction,—"And I, if I be lifted up [in crucifixion], will draw all men unto me,"—began to be very strikingly fulfilled. As many of the converts were in very humble circumstances, those who were rich deemed that a religious profession which taught them to trample the idols of the world under their feet, required them, under the circumstances of the time, to throw their property into a common stock, that all might equally be benefited; and real property not being susceptible of this employment, those who possessed lands sold them, and cast the money they produced into the common fund. There was no rule or order on the subject. Every one was at liberty to do what he pleased with his own property; but as every one was pleased to do this, such a rule as arises from usage, which makes it difficult for one not to do what every one else does, came in time to be established. The distribution of this fund was confided to the Apostles, but ultimately finding that the increase of the converts caused this service to occupy more of their time than they thought right, seven trustworthy disciples were specially chosen to have the charge and distribution of the common stock. It was well this was done; for, perhaps without intending it, the disinterestedness of the Apostles has thus been manifested to all eyes. This was, however, *after* the incident which our Cartoon adumbrates.

Among the converts was one called Ananias. We have no right to doubt the sincerity of his *convictions*; for unless the doctrine of Christ had been evident to his conscience, and his eye had been opened to see "the beauty of holiness," there was certainly no earthly inducement there could be none—to draw him into a body which was every day exposed to the prospect, and often endured the reality, of persecution and distress. He had faith to take the right road, but not enough to prevent him from casting many a longing, lingering look behind on the fair and broad road he had abandoned—not enough to live by, as he walked in the way he had chosen. The practice which had arisen for those who had property to throw it into the common stock formed his great stumbling-block and difficulty. On the one hand he was not at all willing to forego that good report, and character for disinterestedness and faith, which those who thus disposed of their property justly acquired. The credit which had been acquired by Barnabas, who had just before sold a valuable estate and placed the produce at the disposal of the Church, also enhanced the temptation and the difficulty. For while he thus coveted a good reputation in the Church, he loved money and dreaded want. Thus divided between God and Mammon he took the worst course, and almost the only absolutely criminal course which it was possible for him to have taken. He sold his property; but with the concurrence, and very possibly at the suggestion of his wife, he kept back a portion of the price and with a sanctimonious hypocrisy, the very idea of which is appalling, he offered the other part as the whole produce of the sale and as a proof of his devotedness to Christ, declaring indeed, by this pretension, that, like the Apostles themselves, he had left *all* to follow Him.

It is difficult to conceive a deeper crime of the mind, or one which in its effects was more calculated to be dangerous to the infant Church. It required, therefore, to be checked at once by some marked testimony of the Divine displeasure.

When, therefore, Ananias repaired to the place where the Apostles were usually in attendance to receive the offerings of the rich, and to dispense them to the poor,

to lay at their feet his now polluted offering, how great was his consternation to hear the stern reproof of Peter: "Ananias, why hath Satan filled thine heart to lie to the Holy Ghost, and to keep back part of the price of the land. While it remained, was it not thine own; and after it was sold, was it not in thine own power? *Why hast thou conceived this thing in thine heart?* Thou hast not lied unto man, but unto God."

This man, who was not habitually unprincipled or hardened, but whose weakness in one matter had drawn him into an act of dreadful meanness and crime, was struck to the very heart to see that crime placed in this view before him, and to know that his whole course of action and feeling in this matter was known to those whose good opinion he the most desired. The agony of that moment was too great for him to bear: conscience-stricken, he fell to the ground, dead, like one whom a sudden blow had destroyed.

This scene has been represented by the painter with great truth and effect. No one can suggest how the incident could be told with more distinctness, or point out how its general effect might be improved. Objections of details might be started. There are, for instance, perhaps, more solecisms of costume in this picture than in any other of the series; but taken in the whole, there is none in the set more creditable to the *invention* of the painter, because there is no other of the subjects in which it was so difficult to make the picture tell its own tale with distinctness. It is for this reason, probably, that the subject has rarely been ventured upon by any artist; and in the few instances known to us in which the attempt has been made, the failure has been lamentable. The Death of Ananias will assuredly never be better represented than in this Cartoon of Raffaelle.

In the *scene* of the transaction we trace the usual care of this great artist to be real and accurate. We admit, indeed, that there are some points which we are unable to understand with reference to the usual arrangements of an Oriental chamber. But the intention is evident,—to represent the principal or public room of an Eastern house. At the upper end of such a room, and there only, are the windows, as in the Cartoon; and at the same end is a *daïs*, or raised floor of more or less extent, and this is the place of honour, where the master of the house is usually stationed, and where he receives his visitors. This is very properly introduced in the Cartoon, and gives the artist an opportunity of giving a conspicuous and distinguishing station to the Apostles, without interfering with the truth of the action.

The principal action is brought forward into due importance. The words which smote the hypocrite have but just left the lips of Peter, and the conscience-stricken Ananias has fallen back dead; and notwithstanding the mechanical effort, which the hands indicate, to sustain himself, it is evident that in another moment he will be extended on the floor. The whole appearance is that of a man struck dead suddenly in "life's high noon:" this is more manifest in the painting than it can be made in any engraving, which cannot, like colour, imitate those slight indications which distinguish death from a swoon. In the picture there can be no mistake: death has set its seal upon Ananias, and the mortal pallor—the hue of the dead—which is cast over him, indicates, with even more precision than the dropped head and orbless eyes, that the action of the figure is the last convulsive movement of a dead man. The suddenness of the effect is manifested by the unconsciousness of what has passed by all but the few persons immediately near; and among these, the horror-struck recoil of the young man (supposed to be Barnabas) who had evidently been kneeling beside Ananias, on the step of the daïs, affords one efficient contrast of figure and attitude which claims especial admiration. Instinct with life, he has started back from the spot, from which the other has fallen back dead.

In one thing the painter appears to have erred in the story, whether from design or inadvertence. He evidently represents Peter as dooming Ananias to the death he has received: and this, in fact, is the ordinary impression. But, indeed, Peter only placed before him the heinousness of his offence, without saying aught which could lead any one to expect that the man would die. As we view it, he died conscience-stricken: —died from the mingled feeling of shame at finding his secret sin revealed, and horror at perceiving the enormity of the crime, which he had probably led himself to consider as venial as it was convenient.

The scenes to the right and left of the daïs are episodical, and afford an exceedingly proper as well as beautiful relief to the principal action. That to the left is in itself a picture. It was a beautiful thought (says Cattermole) to place the tender-hearted John apart from the main action at such a moment. In that terrible retributive process *he* could not have shared without peculiar pain; while it goes on, therefore, he is engaged, more suitably to his character, in relieving and blessing the distressed objects of the common bounty. The venerable individual who assists St. John in the business of ministering to the necessitous members of the Church is probably intended for his brother St. James. The persons who appear on the right of the Apostles represent the wealthier members of the Church. Among these the most remarkable is the woman employed in counting money. From the scrupulous care with which this is done, and the vexation expressed in her countenance at the prospect of parting with her treasure, she has been commonly supposed to represent Sapphira, the wife of Ananias. According to the letter of the Sacred History, Sapphira did not come into St. Peter's presence until "about the space of three hours after" her husband's death; on which account, some critics, as if afraid to make the painter guilty of an anachronism, have seemed willing to doubt whether she be really the person designed. It was, however, quite consistent with the superior genius of Raffaelle, thus to dispense with exactness in an unimportant incidental fact, in order to accomplish a much higher object.

The three remaining Cartoons belong to the history of St. Paul, and in all of them he is the principal personage. They have also one common character in this respect, that they all represent this great man in his proper and peculiar vocation as "the Apostle of the Gentiles;" in each of them he is among Gentiles, and in a Gentile city.

For three or four years after his miraculous conversion near Damascus, we know very little concerning Saint Paul's movements and operations. We only know that when he returned to Jerusalem he was introduced to the Apostles by Barnabas; and that afterwards, on account of the peculiar animosity which his presence and preaching provoked there, he was advised to withdraw, for a time, to his native city of Tarsus in Cilicia. Meanwhile, in the persecution which arose about the proto-martyr Stephen, the disciples, who had hitherto remained chiefly at Jerusalem, were scattered abroad, repairing chiefly into Phœnicia, and to Cyprus and Antioch. Wherever they went, they preached Christ, and obtained many converts; but as yet they addressed themselves only to the Jews found in those quarters. At Antioch, the capital of Syria, a church was soon formed, and when tidings of this reached the parent church, which had again collected at Jerusalem, Barnabas was sent to that great city to settle the converts in the faith. He did much good there; but soon feeling the need of an efficient coad-

jutor, he went over to Tarsus, the native city of Paul, and having found him there, took him back to Antioch. Here, from their frequent mention of the name of CHRIST, the name of CHRISTIANS was derisively applied to the followers of Jesus, who continued to call themselves "Brethren;" but ultimately, feeling the want of a distinctive denomination, they submitted to receive that which had in the first instance been imposed upon them without their consent. The Jews called them NAZARENES.

A prophet named Agabus having foretold a famine, in which the poor church at Jerusalem appeared likely to suffer much, the rich church at Antioch made up a purse for its relief, and resolved to forward this benefaction by the hands of Barnabas and Paul. Having discharged this duty, they returned to Antioch, taking with them Mark (who was the nephew of Barnabas) as their assistant.

While they continued at Antioch, Paul was called to go forth on his great mission to the Gentiles, and Barnabas was joined to him in this great work. Strong for that work, and dauntless for that high warfare he was called to wage, the Apostle departed,—not then

> "To the farthest verge
> Of the green earth, to distant barbarous climes,
> Rivers unknown to song,"

but—far harder task!—to the high places of intellect and literature—the chief seats of civilization and of the arts belonging to it, where a sterile philosophy had filled and hardened the minds of those who thought; where idolatry, under the most seducing aspects in the world, was interwoven with the whole ideas and habits of the mass of the people; and where the teachers and disciples of the Academy and the Stoa believed themselves the wise ones of this world, and that all were fools beside.

There was, no doubt, a design in this choice. As an eloquent writer remarks:—"If St. Paul had declined visiting the learned and polished regions of Greece, it might have been produced against him, that he carefully avoided those cultivated cities where men were best able to judge of the consistency of the Gospel doctrines with its precepts, and of the truth of those miracles by which its divinity was confirmed. The Greeks might have urged it as an argument against Paul's integrity, that he confined his preaching to the countries which they called barbarous, knowing they would be less acute in discovering inconsistencies, and more easily imposed upon by impostures, which men of liberal education would have immediately detected. His visiting every city famous for literature, science, and philosophy would also be a complete refutation of any such charge in after-ages."*

Paul and Barnabas first crossed over to the island of Cyprus, where there were many Jews, and to which Barnabas himself belonged. They landed at Salamis (now Famagusta), on the east side of the island, and tarried there awhile, preaching in the synagogues of the Jews; after which they crossed over the island to Paphos, "where the most impure worship was offered to the most impure deity," which alone might have seemed a great discouragement to Paul; but knowing that things which seemed hopeless to man were very possible with God, his zeal was never cooled by seeming improbabilities of success. Paphos was also the seat of the Roman governor, by name Sergius Paulus. He soon heard of the strange doctrines taught by the Apostle; but being "an intelligent man," forbore to interfere, until he should learn for himself, how far such doctrines required the cognizance of a public magistrate. From what Galen says respecting this

* Hannah More's 'Essay on the Character and Practical Writings of St. Paul,' 1815, vol. i., p. 182.

same proconsul of Cyprus ('Anat.' i., cited by Wetstein), it would appear that he was a man well versed in natural philosophy. This fact is important in this place, as it furnishes a reason for his cultivating the society of the Jewish philosopher Bar-Jesus, better known by his honorary surname of Elymas,* or "the magus;" and as a person of his cultivation and character was probably conscious of the folly of the common polytheism, it may be expected that he had heard with pleasure, from this person, of the One God whom the Hebrews worshipped. This person trembled for his influence with the proconsul, and, animated by the enmity against Christ and his doctrine which the Jews in general manifested, opposed the Apostles with great vehemence and virulence at the interview with the governor. At last Paul—feeling in himself that influence from above, which indicated and authorised his course of action—"fixed his eyes on him," and concluded a short but stern reproof with the awful words "And now, behold the hand of the Lord is upon thee, and thou shalt be blind—*not seeing the sun*, for a season." And, it is added, "Immediately there fell on him a mist and a darkness; and he went about seeking some one to lead him by the hand." Astonished both at the doctrine which he heard and the miracle which he saw, Sergius Paulus became our Apostle's first recorded convert to the faith. What became of Elymas we know not with certainty; but there is much probability in the early tradition that he was himself converted, and, after a while, restored to sight by St. Paul. Indeed the denunciation itself declared the blindness should be but temporary ("for a season"), being evidently intended for conviction rather than for judgment.

The representation has given the artist an opportunity of diversifying his scenery and costume, by the necessary introduction of Romans and the representation of a Roman prætorium; and the mixed effect thus produced is very good. The ample description which this picture has already received in the 'Penny Magazine' (No. 81), leaves but little room for observation. What chiefly engages the attention—engages it even more than the grand and almost awful figure of the Apostle—is the wonderful representation of the effects of sudden blindness in the figure of Elymas. We not only see that the man has that instant been stricken blind, but we see that the blow has crushed him. The sentiment of astonished and bewildered deprivation pervades every part of the figure, and speaks in every line of the countenance; his very soul seems stricken with blindness, as well as his body.

In all the subjects which represent miracles of mercy or of judgment, great effect is produced by the development of the different impressions, and different manifestations of the same impression, on the part of the spectators. This is finely instanced in the present Cartoon, where these impressions are shown in forms more marked and distinct than, we think, in any other. In all of them there is one man who is bent on satisfying himself by a more close ocular inspection of the fact. In the Death of Ananias, in Elymas struck Blind, and in the Sacrifice at Lystra, the men making this inspection are clearly distinguished, and they all express the same feeling of conviction and astonishment: yet how different in every respect are these three figures; how different in attitude, countenance, character, and even in their different modes of conveying the same impression. This is one unmistakeable evidence of the great opulence of Raffaelle's mind, the abund-

* *Elymas* (from the Arabic *Aliman*, "wise") means *Magus*, a title given to Eastern philosophers, especially such as cultivated natural science. It is unfortunately rendered by "sorcerer," as the reader is thus kept ignorant of the real cause of his influence with the proconsul. The original is Ἐλύμας, ὁ μάγος, "Elymas, the magus."



[Elymas struck Blind.]

ance of his resources. In the present instance, the sturdy conviction and intense astonishment of the man who bends forward to look into the sightless eyes of Elymas, forms a figure which in fulness of expression is only inferior to that of Elymas himself.

Leaving Cyprus, Paul and Barnabas sailed northward to the coast of Pamphylia (Asia Minor), and landed at the port of Perga. From thence they proceeded to Antioch in Pisidia, and after some memorable transactions there, and subsequently at Iconium, they proceeded to Lystra of Lycaonia—an important city then, but the very site of which is now a matter of some doubt. Here, upon a poor cripple, "who had never walked," Paul performed a miracle of healing, almost exactly similar to that which Peter and John had performed at the Beautiful Gate in Jerusalem. This made a prodigious sensation; and the immediate effect was not less unexpected than horrifying to Paul and Barnabas. The people, whose mythology taught them that their gods often came down to walk the earth in the form of men, found little difficulty in concluding that those who could work such wonders were really gods; and they raised a cry, "The gods are come down to us in the likeness of men!"—Barnabas, from his grave demeanour and dignified port, they deemed to be Jupiter; and they were no less certain that the eloquent Paul—"the chief speaker" of the two—must be Mercury himself, the interpreter of the gods. The priests of Jupiter hastened with their oxen and garlands to offer sacrifices, in behalf of the people, to the descended gods. Shocked beyond measure, the Apostles rent their clothes, and rushed in among the people, entreating them to desist. The language which Paul used was, as usual with him, admirably adapted to the occasion and to the audience. "Short, plain and simple, yet passionate and energetic; so plain as not only to be understood, but felt, by the meanest auditor; yet so powerful, that, when aided by a miracle of mercy, which he wrought before them, he scarcely restrained them from offering him divine honours."

Not long after, Paul was stoned and left for dead, by the people who but a little while before had been ready to worship him as a god. But the appointed work of this wonderful man was not yet accomplished; nor his appointed time yet come. While therefore the disciples stood sorrowing around his apparent corpse, he rose up, as one who felt no harm, and went back into the city with them.

The moment in which Paul rends his clothes, before rushing forward to stay the sacrifice, is that to which the action of this picture belongs. The able writer who previously wrote of this Cartoon in the 'Penny Magazine,' thinks that Paul is not rending his clothes, but is simply baring his breast to show that he is a man, in accordance with the words which he is supposed to be uttering. But we prefer the common interpretation. For Paul certainly did rend his clothes, but we know not that he bared his breast; baring the breast is an action not once named in all the Scripture, whereas rending the clothes was a common expression of concern or grief; and, above all, the exposure of his breast could satisfy them of nothing but what they already knew; they already believed that Paul and Barnabas had human bodies—were men; but doubted whether their bodies, their manhood, had not been put on, like a dress, by higher beings. In other respects the admirable description which the writer to whom we refer has given of this Cartoon has anticipated nearly all we could wish to say in reference to it. We shall, however, venture to call attention to one or two points, by which we have been ourselves the most impressed.

And, first, the figure of the healed cripple engages our interest. In our remarks on the picture of the Beautiful Gate, we noticed the characteristic deformity of the features of the two cripples. It is evident that the man now before us—also a cripple from his birth—

had been similarly marked in his countenance. But his face, as well as his limb, has undergone the healing process; and although not handsome, he is no longer deformed. In his relieved, unbent, open, and radiant countenance, as well as in the posture of his hands and feet, we see that he will rejoice to honour his deliverer in whatever character he chooses to be honoured—whether as God or man. By one of those touches which we seldom find out of Hogarth, the recovered leg—and a very handsome leg it is—is planted between the crutches lying on the ground, which were formerly its substitutes. Attention is further drawn to the recovered limb by the act of the very respectable person who, in accordance with the remark which was lately made, gently lifts up the corner of the man's skirt to satisfy himself by ocular inspection concerning the miracle which has been performed. We see by the movement of his left hand that he *is* satisfied. The full, well-rounded leg, which supplies the place of the previously-wasted limb, furnishes evidence not to be mistaken. This person's curiosity is shared by others who stand near; and among those whose regards are rather turned to the Apostle, we are struck by the action of the fine young man who, obviously impressed by his act and words, stretches forth his arm to arrest the blow of the sacrificer. This person is supposed to be designed to represent the young Timothy, who was a native of the place, and who may very well have imbibed his first impressions of Christian truth on this occasion, although his name does not occur until the subsequent visit of St. Paul to Lystra.

The scene of the sacrifice itself, which fills the body of the picture, is beyond all comparison the finest and most accurate representation of the ancient sacrificial ceremonies which we possess. It is copied, in great part, from an ancient basso-relievo since published: but this, so far from being a reflection upon his invention, is highly to the credit of his wish and determination to be accurate; and this was the only way in which he could be so. This fact confirms all our preceding observations on this subject. By this measure he has given a reality to the scene, and an antiquarian value to this Cartoon, which we know no that any other picture possesses. Instead of being as most pictures are, an eye-sore and a grievance to one acquainted with ancient customs, it possesses great interest to him, and would be a valuable study for him. Any one might, merely in the way of comment upon this picture, produce a most curious and satisfactory account of ancient sacrifices. In the painting itself, the concentrated muscular energy and definite purpose, to strike true and sure, of the sacrificer, attracts much notice; and scarcely less admirable is *the look* and figure of the man who keeps the ox quiet—an important function, as the least indication of repugnance or restlessness in the victim was regarded as a bad and fatal omen.

After leaving Lystra, Paul and Barnabas do not appear to have made any farther progress into the interior of Asia Minor. They revisited successively the places at which they had been before; and at last reached Attalia, a port of Pamphylia, where they embarked on their return to Antioch. In that metropolis Paul remained for several years, with the only known interruption of a journey which he made to Jerusalem in company with Barnabas, to have a conference with such of the Apostles as had remained there.

At length, in the year 52 A.D., Paul proposed to Barnabas that they should undertake a tour of the several cities which they had previously visited, that they might learn how the churches which they had there founded prospered. Barnabas was willing; but he wished his nephew Mark to be of the party, and to this Paul was disinclined, on the ground that Mark, who had started with them in the previous journey, had abandoned them at Pamphylia, and returned home. Barnabas, however, persisted; and it is lamentable to add, "the contention was so sharp between them," that they "parted asunder, the one from the other." By this, however, we are not to understand that they parted in anger, but that they agreed to divide the proposed object between them; Barnabas undertaking to visit the churches in his native Cyprus, and Paul those in Asia Minor. Barnabas took Mark with him, and



[Sacrifice at Lystra.]

Paul made choice of Silas for his companion in this journey.

This time Paul travelled by land through part of Syria, and through his native province of Cilicia, to the quarter containing the cities which he had visited before. Finding that their churches were in a prosperous and increasing condition, the apostle enlarged the original object of his journey, and proceeded through the extensive regions of Phrygia and Galatia, everywhere preaching the doctrine of Christ. He would have gone into Bithynia; but being prevented by one of those supernatural intimations to which he was accustomed to give good heed, he turned aside and traversed the Propontic province of Mysia, until he found himself near the sea at Troas, a common point of embarkation for Greece.

It should have been mentioned, that in his second visit to Derbe, near Lystra, Paul had induced a young convert, named Timothy, to join his missionary party. Timothy was the son of a Greek father and Jewish mother, and proved a young man of fine character, who became affectionately attached to Paul, who on his part loved him as his own son. We may well believe that the company of this faithful follower was a great comfort and refreshment to the Apostle. At Troas the party was joined by Luke, the author of the history (in the *Acts of the Apostles*) which we follow, and who henceforth continues the narrative in his joint person.

While at Troas Paul received one of those intimations to which we have already alluded, and by which he was induced to embark for a new and important field of labour—Greece.

Setting sail, therefore, from Troas, they went straight across to the island of Samothrace, and from thence to Neapolis in Macedonia; and next to Philippi, the chief city of this part of Macedonia. It was formerly called Crenides, from the numerous springs which join and form a river noticed by the sacred historian (*Acts*, xvi. 13), though not in the maps, and affording a good proof of his geographical accuracy. After some interesting occurrences at this place, they departed; and travelling through the country by way of Amphipolis and Apollonia, came to Thessalonica, a maritime city, and the metropolis of that district of Macedonia, where a large number of Jews were settled. Some of them and a larger number of Greeks were converted, and attached themselves to Paul and Silas; but the great body of the Jews raised a tumult against them and their friends, which compelled them to quit the city and go to Berea. There similar success was followed by a similar tumult, stirred up by unbelieving Jews who had followed them from Thessalonica, so that the brethren there deemed it prudent that Paul should leave the place. They escorted him along the sea-side to Athens, while Silas and Timothy remained behind with directions to follow him as soon as possible.

"Though the political and military splendour of Athens had declined, and the seat of government, after the conquest of Greece by the Romans, had been transferred to Corinth, yet her sun of glory was not set. Philosophy and the liberal arts were still carefully cultivated; students in every department, and from every quarter, resorted thither for improvement, and her streets were crowded by senators and rhetoricians, philosophers and statesmen.

"As Paul visited Athens with views which had instigated no preceding, and would probably be entertained by no subsequent traveller, so his attention in that most interesting city was attracted by objects far different from theirs. He was, in all probability, qualified to range, with a learned eye, over the exquisite pieces of art, and to consult and enjoy the curious remains of literature,—theatres, and temples, and schools of philosophy, sepulchres and cenotaphs, statues of patriots and portraits of heroes; monuments by which the artist had insured to himself the immortality he was conferring. Yet one edifice alone arrested the Apostle's notice—an altar of the idolatrous worshippers. One record of antiquity alone invited his critical acumen—the inscription, 'To THE UNKNOWN GOD!'"*

While Paul waited at Athens for his companions, "his spirit was stirred in him when he saw the city wholly given to idolatry;" or rather, "filled with temples, altars, and idols." He could not withhold his testimony to the truth. In the synagogues he debated with the Jews and proselytes; and in the market-places, with the people who congregated there. A stranger with a strange doctrine soon attracted the attention of the most idle, curious, and critical population in the world; for as the sacred writer, with characteristic accuracy, remarks, "All the Athenians and strangers which were there, spent their time in nothing else, but either to tell or to hear some new thing." Among the rest the Apostle encountered some Epicurean and Stoic philosophers: and when they heard him preach of *Jesus* and the *Resurrection*, some said, "What meaneth this babbler to say?" Others, "He seemeth to be a setter forth of strange demons." The former were probably Epicureans, who denied the possibility of a resurrection, which they stigmatised as "the hope of worms;" and the latter, Stoics, who considered Jesus as a demon or hero, according to their own theology.

The Greeks held that demons were a middle class of beings between gods and men, and regarded them as mediators or agents between both. Of these they believed there were two sorts, terrestrial and celestial: the former were considered to be the spirits of eminently good men, advanced to the honour and dignity of demons; the latter were supposed to be of a higher order of spirits, who never had been encumbered with a body, and from whom the guardian demons, or angels, as we should say, of men were chosen. Such, for instance, was the celebrated demon of Socrates. This heathen doctrine of demons was well understood by Paul, who was versed in the learning and philosophy of the Greeks, and who makes frequent allusions to this belief in his Epistles.

The charge of being a setter forth of strange demons was of a very serious nature. On such a charge Socrates had been condemned to death.† There appears, however, to have been considerable relaxation in this respect since that time: and although the philosophers invited or required Paul to proceed to the Areopagus, to give an account of his doctrine, we do not suppose that it was the intention to bring him, then at least, to a formal *trial* before the supreme and august tribunal which sat there. That might have been the ultimate result; and this contingency, together with the opposing opinions and high education of his audience, made the occasion sufficiently solemn and trying, and called for all the tact and all the abilities with which the Apostle was so eminently gifted. Nor did they fail in this emergency. The consummate address with which St. Paul acquitted himself on this new and difficult occasion, and the readiness with which his opulent mind found resources equal to its demands upon him, has won the admiration and applause of all ages.

The writer whom we have already more than once

* 'Essay on the Character of St. Paul,' p. 207.

† "The sentence was, "Socrates is guilty of not holding those to be gods whom the city holds; *and of introducing other new demons;* he is guilty also of corrupting the youth." Xenoph., 'Mem. I.,' i. 1.

quoted in this present Supplement, has finely characterised the discourse which he there delivered :—

"The disposition of this people, their passion for disputation, their characteristic and proverbial love of novelty, had drawn together a vast assembly. Many of the philosophical sects eagerly joined the audience. Curiosity is called by an ancient writer the wantonness of knowledge. These critics came, it is likely, not as inquirers, but as spies. The grave Stoics probably expected to hear some new unbroached doctrine which they might overthrow by argument; the lively Epicureans, some fresh absurdity which would afford a new field for diversion;* the citizens, perhaps, crowding and listening, from the mere motive that they might afterwards have to tell the *new thing* they should hear. Paul took advantage of their curiosity. As he habitually opened his discourses with great moderation, we are the less surprised at the measured censure, or rather, the implied civility of his introduction. The ambiguous term (translated) 'superstitious,'† which he employed, might be either construed into respect for their spirit of religious inquiry, or into disapprobation of its unreasonable excess; at least he intimated that they were so far from not reverencing the acknowledged gods, that they worshipped one that was UNKNOWN.

"With his usual discriminating mind, he did not reason with these eloquent and learned polytheists 'out of the Scriptures,' of which they were totally ignorant, as he had done at Antioch and Cæsarea before judges who were trained in the knowledge of them; he addressed his present auditors with an eloquent exposition of natural religion, and of the providential government of God, politely illustrating his observations by citing passages from one of their own authors. Even by this quotation, without having recourse to Scripture, he was able to controvert the Epicurean doctrine, that the Deity had no interference with human concerns; showing them, on their own principles, that 'we are the offspring of God,' and that 'in him we live, and move, and have our being;' and it is worth observing that he could select from a poet sentiments which come nearer to the truth than any from a philosopher.

"The orator, rising with his subject, after briefly touching on the long suffering of God, awfully announced that ignorance would be no longer any plea for idolatry; that if the Divine forbearance had permitted it so long, it was in order to make the wisest not only see but feel the insufficiency of their own wisdom in what related to the great concerns of religion; but He now 'recommended all men, everywhere, to repent.' He concludes‡ by announcing the solemnities of Christ's future judgment and the resurrection from the dead.

"In considering Saint Paul's manner of unfolding to these wits and sages the power and goodness of that Supreme Intelligence who (as the *Unknown God*) was the object of their 'ignorant worship,' we are at once astonished at his intrepidity and his management: intrepidity, in preferring this bold charge against an audience of the most accomplished scholars in the world—in charging ignorance upon Athens! blindness on 'the eye of Greece!'—and management, in so judiciously conducting his oration, that the audience expressed neither impatience nor displeasure till he began to unfold the most obnoxious and unpopular of all doctrines—Jesus raised from the dead."

As the philosophers of the time, however much they disagreed among themselves, all joined in contemning this one doctrine of Christianity—the resurrection from the dead, which every sect alike conceived to be the most inconsistent with their own tenets and the most unsatisfactory to general philosophical principles, we are not surprised to learn that "When they heard of the resurrection of the dead, some mocked; but others said, We will hear thee again concerning this matter." As, however, the Apostle had proved that so far from being "a setter forth of strange gods," he had only sought to make known that God whom they had worshipped without knowing, he was allowed to depart undisturbed. Amid the general unbelief, some joined him and believed, among whom were Dionysius the Areopagite and a lady named Damaris.

The representation of this scene—*Paul preaching at Athens*—forms what will seem to many persons the greatest of all the Cartoons. Indeed, we know not that the whole range of art contains a picture so *intellectual* as this. Few artists have lived who would not have shrunk from undertaking to represent the impressions produced upon men of cultivated intellect, but of very different opinions and characters, by a new and striking doctrine, when first brought before them. But no undertaking was too great or too arduous for Raffaelle, and in this his success has been wonderful. It is justly remarked by the writer whom we more than once quoted in the last Supplement, that "The Paul preaching at Athens might of itself be made the study of a life. It contains such a collection of heads as is not to be found together in the whole world besides, and every one of which is worthy of an essay on its individual character, and on its connection with the others that surround it."

As it is not our present purpose to write such essays, we shall be content to copy a few of Cattermole's remarks upon some of the principal characters. With reference to Paul himself, he observes:—"It is not merely the imposing dimensions and pre-eminent situation of St. Paul which point him out as the hero of the piece, but likewise his distinguishing attitude and expression. What is chiefly to be admired in this fine figure is its characteristic propriety. In this respect it has never been surpassed. The St. Paul of Raffaelle is not merely an orator, although in action, attitude, and expression inspired by the noblest spirit of eloquence; he is not merely a prophet, though in the mild sublimity and mysterious penetration of his glance the prophetical seems the leading characteristic; he is not merely a philosopher, and yet the love of truth, acquaintance with its profound revelations, and intrepid devotedness to its cause, animate every part of his figure. He is all these and more. We at once recognise in him the embodied idea of an Apostle—the greatest of the Apostles. . . . . If, beginning with the persons placed behind the Apostle, the eye be carried round to the other extremity of the semicircle, we shall immediately be struck with the beautiful gradation, from the extreme of bigoted resentment to the most unreserved and affectionate faith. The group which occupies the latter point consists of the two figures in the foreground. These are Dionysius, a member of the court of Areopagus, and Damaris, whom the sacred historian has recorded among the converts at Athens. In both these persons is discovered a virtuous disposition, exalted by the refinements of education, adorned with external beauty, and now further enhanced by the sweet complacency diffused over their countenances, by a recent admission

* We are not quite sure that Hannah More appears to have clearly understood the Epicureans and their doctrines;—but let that pass.

† The word used by Paul, *δεισιδαιμων*, is one of middle signification, and susceptible of two senses—"religiously disposed," or "superstitious:" our translators have chosen the bad sense; but the good one was more probably intended.

‡ So his discourse, *as it stands*, concludes; but he would manifestly have said more had he not been interrupted.

to the enlightening truths and ennobling hopes of Christianity. The head of Dionysius is exquisite for drawing and colouring. Not less worthy of remark are the corresponding action and expressive drawing of the hands; while, as usual in these works, his garments seem to partake of the general sentiment. Again, what consistency and charm in Damaris. The perfect sweetness and ingenuousness of her countenance seem, as it were, to *flow down* over the hair and drapery. In the former, especially, which (*simplex munditiis*) is freely but neatly arranged, is indicated a character of female purity and candour, admirably contrasted with the majority of persons introduced into the picture;—such as the Dionysius and Damaris of this work, we feel assured *must* have been those individuals who were the first-fruits of St. Paul's ministry in the most tasteful and intelligent of the Grecian cities."

We abstain from particular remark on the other individuals introduced in this grand work, but cannot altogether pass by the group of four philosophers immediately in front of the Apostle. "Perhaps (says the author we have just quoted) art presents nothing more highly intellectual than this wonderful group of *thinking* figures, each so absorbed in attention, yet all so varied and individualised."

In this picture Paul is certainly represented as *preaching*, not *pleading*, and the audience is a mixed assembly of philosophers and others, not of judges. On this ground the judgment and accuracy of the painter has been assailed (among others by a correspondent in No. 58 of this Magazine). Certainly the alternatives of interpretation are open; but it does happen that the view which Raffaelle was induced to take of the transaction is that which the best biblical critics for the last two centuries have been upon the whole agreed in adopting.

It is very true that Paul was taken to "Mars' Hill," the place where the supreme court of Areopagus held its sittings, which court had cognizance of all grave offences against morals and religion; but there is not the least evidence that the court was then sitting, or that the proceeding was at all judicial. Indeed, it strikes us as conclusive on this point, that Paul was taken or invited to Mars' Hill by day—for it was after he had been preaching in the market-place—whereas the court of Areopagus always held its sittings in the dead of the night. It would, therefore, appear, that as a body of philosophers, including many Areopagists as such, they invited Paul to give an account of his doctrines, that they might ascertain whether they contained matter of which the Areopagus might ultimately, as a court of justice, be expected to take cognizance. The place where the court sat, being near at hand, vacant by day, and appropriated to such inquiries, might easily occur as a suitable place for hearing the Apostle.

In conclusion, we may be excused for desiring to fortify our concurrence with Raffaelle, by producing the testimony of a learned annotator, whose work happens to be the first to which we have turned:—"It is probable that their curiosity was strongly excited, and that the better inclined brought Paul before the Areopagus in order to obtain a fuller explanation of the doctrines propounded by him, while others *might* only have in view an occasion of ridicule. Nor is there anything in the whole narration that indicates a *trial*: we have neither the indictment of accusers nor the interrogatories of judges. Paul does not address them as judges; neither does he attempt any exculpation of his conduct. Indeed, I suspect that Paul was not brought to Areopagus as before the court of Areopagists, but that the place was selected as a proper one for such a public inquiry, and the Areopagists who sat there sat not *ex officio*, but as philosophers. In short, the whole seems to be an affair with *philosophers*, and not with *judges*."*

In concluding this notice of the Cartoons, we cannot do better than advice such of our readers as have not seen them, to go and look at them: and those who have already seen them, to go and see them again.

* Bloomfield's *Recensio Synoptica*, in *Acts*, xvii. 19.



[Paul Preaching at Athens.]



[Portrait of Richard III., from a fine picture published by the Royal Antiquarian Society: the arms from a design composed from contemporary authorities by J. R. Planché, Esq. At top—Bosworth Field, from a drawing by G. F. Sargent, Esq. At the bottom—Ludlow Castle, and Richard's Lodging House at Leicester, from views by Britton.]

LOCAL MEMORIES OF GREAT EVENTS.

THE BATTLE OF BOSWORTH FIELD.

The scene of the battle, so important in its results, as terminating the long and bloody strife which desolated England during the contentions of the houses of Lancaster and York, is a plain commencing about a mile southward from the agreeable town of Bosworth, in Leicestershire, or, as it is commonly called, to distinguish it from another place of the same name, Market Bosworth. This is the place mentioned in Domesday under the appellation Boseworde, where, in reference to this and some other demesnes, the account states that "all these lands Saxi held, *and might go whithersoever he pleased.*" The plain or battle-field is fine and spacious, of an oval form, about two miles long, and one broad, and is almost surrounded by hills. From the colour of the soil, it was known, prior to the great event which now gives it the name of Bosworth Field, as Redmore Plain. Nor is that the only change the spot has experienced. At the period of the battle it was one broad sweep of uncultivated land, having neither hedges nor trees. Now the progress of cultivation has altered its aspect in every particular except the general form and outlines.

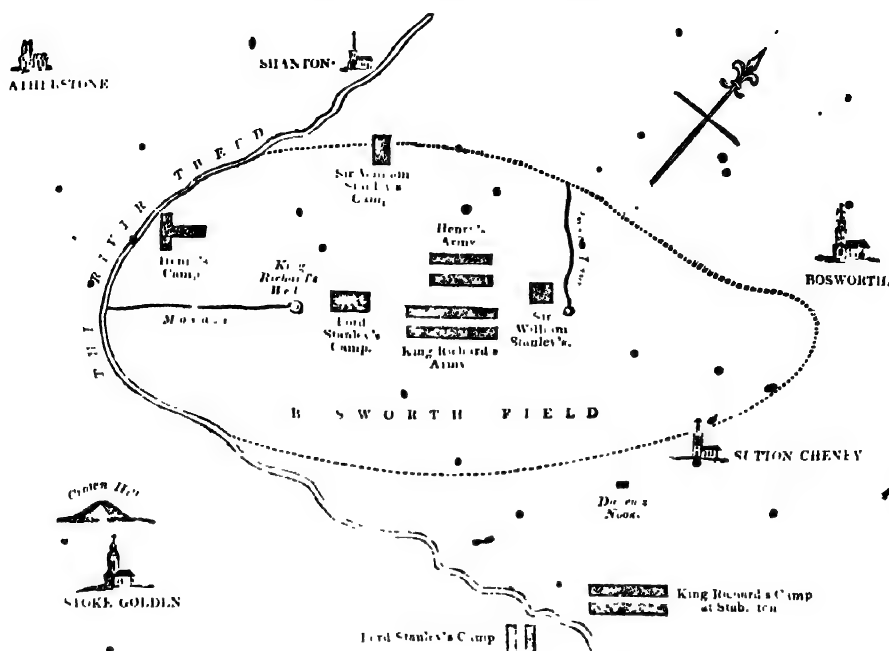
But little more than two years had elapsed from the date of his coronation, when Richard received intelligence that Richmond, whom he had driven from the court of Brittany, where he had so long received shelter, had succeeded in reaching the territories of

the French king, and been welcomed there not merely with kindness, but with offers of assistance both as to money and soldiers. Three thousand Normans, he was informed, men whom the French historian Comines describes "as the loosest and most profligate fellows of all that country," were already assembled under Richmond's banners at Harfleur, and preparing for the descent upon England. Richard proved himself fully equal to the emergency, and acted with a promptitude, ability and decision worthy of a better cause. He issued a proclamation, in which he denominated Richmond as "one Henry Tudor, descended of bastard blood, both by father's and mother's side, and who therefore could never have any claim to the crown of England but by conquest." He asserted that this Henry Tudor hoped to achieve his false intent by the aid of the ancient enemies of England, and had purchased such aid by covenanting to give up in perpetuity to France all rights to Normandy, Anjou, Maine, Guienne, and even Calais, and to dissever the arms of France from those of England for ever; that he had promised and given away to traitors and foreigners archbishoprics, bishoprics, duchies, earldoms, baronies, and other inheritances of knights, esquires, and private gentlemen; that he intended to change and subvert the ancient laws and liberties; that he was coming with bands of robbers and murderers, and with rebels attainted by the high court of parliament, of whom many were known for open cut-throats, adulterers, and extortioners. He called upon his subjects, like true and good Englishmen, to arm for the defence of their wives, children, goods, and hereditaments, and he promised, like a diligent and courageous prince, to put his most royal person to all labour and peril necessary in their behalf. The proclamation was altogether drawn up with great skill, and he promised no more for himself than most men knew he would perform; but he was without money, and had little dependence on his officers. Some forced loans were now raised among the citizens of London, and by that means what little popularity he possessed among them was destroyed. Richard's plan was to intrust the defence of the sea-coasts to his friends; for being uncertain as to where Richmond might land, he could not venture to assume that duty himself, lest the invaders might escape him; and then to collect under his own banners a great army in the centre of the kingdom, ready to march whenever it might be requisite. Most of these friends betrayed their trust, and Richmond, on the 7th of August, 1484, landed without opposition at Milford Haven, with only three thousand Normans, and about two thousand English who had joined him. His trust evidently was in the general feeling that he believed existed in his favour. Richard, who had been joined by the people of the north under the earl of Northumberland, marched to attack him, and on his way was met at Leicester by additional reinforcements under the command of the duke of Norfolk, the lord Lovel, and Brackenbury, consisting mainly of levies from the eastern counties, from Hampshire, and from London. Many other lords and sheriffs of counties had been summoned, but neglected to obey; and Lord Stanley, the husband of Richmond's mother, was among them: he sent, however, to regret his non-attendance, which he attributed entirely to the sweating sickness that confined him to his bed. Lord Strange, a son of Lord Stanley, was in Richard's camp; him the king seized in the very act of attempting to fly, and obtained from him a confession that all the family were leagued with the invader, excepting its head, Lord Stanley, who, he said, would soon join King Richard. He now wrote to hasten his coming, being in the meanwhile kept a close prisoner.

Richmond, having crossed the Severn, where he was joined by the Talbots and a few other families, pressed on to meet his formidable antagonist. His force was still very inconsiderable as compared with Richard's, but the conviction he had of the instability of the latter assured him. On the 21st of August he was at Tamworth, from which he marched to Atherston, where swarms of deserters from the king's camp swelled his numbers, and inspired them with eager anticipations of success. The armies were now approaching each other. On the same day that Richmond quitted Tamworth, Richard set out from Leicester, and whilst the former stopped for the night at Atherston, the latter encamped near the town of Bosworth. The final position was not yet taken by either party. "The fame went," says the picturesque old chronicler Hall, "that he (Richard) had the same night a dreadful and terrible dream; for it seemed to him, being asleep, that he saw divers images like terrible devils, which pulled and hauled him, not suffering him to take any quiet or rest. The which strange vision did not so suddenly strike his heart with a sudden fear, but it stuffed his head and troubled his mind with many dreadful and busy imaginations; for incontinent after, his heart being almost damped, he prognosticated before the doubtful chance of the battle to come, not using the alacrity and mirth of mind and of countenance as he was accustomed to do before he came toward the battle. And lest that it might be suspected that he was abashed for fear of his enemies, and for that cause looked so piteously, he recited and declared to his familiar friends in the morning his wonderful vision and terrible dream." The admirable use Shakspere has made of Hall's narrative in this passage will be evident to all who are familiar with either the written or the acting version of the play on this subject. It i the same with some other of Hall's most interesting passages. The cloud, however, soon passed, and Richard was, in the poet's words, "himself again," when his soldiers beheld him on the following morning riding on horseback through their ranks, bravely apparelled, with the crown on his head, and marshalling all into due order. Both armies were early in motion, and, after a short march, faced each other on Redmore Plain. The plan in the opposite page, copied from Nichols's 'Leicestershire,' shows the relative positions of the different leaders.

Hall's account of the subsequent events is so full of spirit, that we cannot do better than borrow largely from it. "When the one army espied the other, Lord, how hastily the soldiers buckled their helms! how quickly the archers bent their bows, and frushed their feathers! how readily the billmen shook their bills and proved their staves! ready to approach and join when the terrible trumpet should sound the bloody blast to victory or death. Between both armies there was a great morass, which the Earl of Richmond left on right hand, for this intent, that it should be on that side a defence for his part; and in so doing, he had the sun at his back, and in the face of his enemies. When King Richard saw the earl's company had passed the morass, he commanded with all haste to set upon them: then the trumpets blew, and the soldiers shouted, and the king's archers courageously let fly their arrows. The earl's bowmen stood not still, but paid them home again. The terrible shot once passed, the armies joined and came to hand strokes, where neither sword nor bill was spared; at which encounter the Lord Stanley joined with the earl, having three thousand men with him. The junction at this moment had been sagaciously planned, not only from the greater effect it would have, but also as offering a reasonable chance of escape for Lord Stanley's son from the vengeance of the king."

Richard's cause was now desperate; he saw in front many a banner displayed against him, which but a few



hours before was rifted in his favour. He saw behind dismay and disorder among the troops faithful to him, from the desertion of entire bands of those who had been hitherto on their side. The Duke of Norfolk and his son the Earl of Surrey were the only noblemen really true to Richard; and they gave earnest of what might have been the result of the battle of Bosworth if there had been a few more like them. Norfolk's attack upon Richmond's van was highly successful, but no other leader supported him, and the movement ended in nothing. A bold stroke alone could redeem to the king the fortunes of the day. So "being admonished by his explorators and especials that the Earl of Richmond, accompanied with a small number of men-at-arms, was not far off; and as he approached and marched toward him, he perfectly knew his personage by certain demonstrations and tokens which he had learned of others; and being inflamed with ire and vexed with outrageous malice, he put his spurs to his horse, and rode out of the side of the range of his battle, leaving the avant-gardes fighting, and like a hungry lion ran with spear in rest towards him. The Earl of Richmond perceived well the king coming furiously towards him, and by cause the whole hope of his wealth and purpose was to be determined by battle, he gladly proffered to encounter with him body to body, and man to man. King Richard set on so sharply at the first brunt, that he overthrew the earl's standard, and slew Sir William Brandon, his standard-bearer, and matched hand to hand with Sir John Cheinye, a man of great force and strength, which would have resisted him, and the said John was by him manfully overthrown, and so he making open passage by dint of sword as he went forward, the Earl of Richmond withstood his violence, and kept him at the sword's point without advantage longer than his companions either thought or judged; which being almost in despair of victory, were suddenly recomforted by Sir William Stanley, which came to succour with three thousand tall men, at which very instant King Richard's men were driven back and fled, and he himself manfully fighting in the middle of his enemies, was slain, and brought to his death as worthily he had deserved."

Lord Stanley now picked up the battered and blood-stained crown, and placed it on Richmond's head, amidst enthusiastic shouts of "Long live King Henry!" The Duke of Norfolk, Lord Ferrers, Sir Richard Ratcliffe, Sir Robert Brackenbury, and a few other knights, shared the fate of their master; and in all about three thousand men perished in the conflict. The body of Richard was now stripped, laid across a horse's back behind a pursuivant-at-arms, who, thus mounted, rode after the new king into Leicester. After exposure for two or three days, "that all men might behold it," it was buried with little respect in the church of the Grey Friars. It is supposed that Richard was in his thirty-third year when he died.

The localities of some interesting memories of the battle are still pointed out. The place where Lord Stanley crowned Richmond is known by the appellation of Crown Hill. A well obtained the name of King Richard's well, from the tradition that the king had quenched his thirst at it during the battle. When Dr. Parr visited Bosworth Field in 1812, he found that it had been drained and closed up some six or seven years before. By the zeal of the learned doctor a subscription was raised for the erection of a suitable monument on the spot, for which he wrote an appropriate Latin inscription. In digging and ploughing the soil of Bosworth Field, many tokens of the battle have been discovered, including shields, crossbows, arrow-heads, halberds, pieces of armour, rings, spurs, and occasionally human bones and skeletons.

THE MANTIS.

Most of our readers know that the Greek name of *Mantis*, which signifies *soothsayer*, or *prophet*, has been given to a genus of hemipterous insects, which contains upwards of sixty species. These insects are found in all warm countries, and are remarkable not only for their very singular forms, but from the grotesque attitudes which they usually assume, and which are often so significant as to seem to the ignorant, in different countries, to indicate peculiar faculties and powers of a higher order than any part of the history of nature has been found to exemplify. Three different species have been, and are, regarded with various de-

grees of superstitious regard, amounting in some cases to something very like actual worship. Hence the name mantis; and hence the surnames of *religiosa, precaria, sancta*, religious, praying, holy, which some of the more marked species have obtained. The peculiarities which have procured this superstitious regard are chiefly two:—1. That of erecting the thorax at an angle with the body, and placing the large forelegs together, like the hands of a person when at prayer, and which has actually led to the notion of its being engaged in an act of worship or invocation. 2. The habit of stretching the forelegs sometimes to the left and sometimes to the right side, which has been taken for a benevolent intention to point out the right road to way-lost passengers.

The superstition respecting the Mantis begins in Southern Europe, and, in our progress over the world, is found almost wherever a characteristic species of the insect is found.

In Languedoc and other southern provinces, where the Mantis is very abundant, both the characters we have indicated are ascribed to it by the peasantry, who give it the name of *Le Prie Dieu*, as if it prayed to God. Here, as wherever else this superstition prevailed, it is considered a great crime to injure the Mantis, and as, at least, a very culpable neglect not to place it out of the way of any danger to which it seems exposed.

The Turks and other Moslems have been much taken by the actions of the Mantis, which greatly resemble some of their own attitudes of prayer. They readily recognise intelligence and pious intentions in its actions, and accordingly treat it with respect and attention—not indeed as in itself an object of reverence or superstition—but as a fellow-worshipper of God, whom they believe that all creatures praise, with more or less of consciousness and intelligence.

But it is in Africa, and especially in Southern Africa, that the Mantis receives its highest honours. The attention of the missionaries in that quarter was necessarily much drawn to the sort of religious veneration paid to an insect, and from their accounts some curious information may be collected.

Dr. Vanderkemp, in his account of Caffraria, after describing the insect, says that the natives call it *Oumtoanizoulou*, the *Child of Heaven*; and adds that "the Hottentots regard it as almost a deity, and offer their prayers to it, begging that it may not destroy them." Mr. Kirchener, speaking of the same people, reports, "They have no idea whatever of the Supreme Being, consequently they practise no kind of worship: they have, however, a superstitious reverence for a little insect, known by the name of the *Creeping Leaf*, a sight of which they conceive indicates something fortunate, and to kill it they suppose will bring a curse upon the perpetrator."

Here the Mantis is undoubtedly intended, for, as perhaps we should have previously noticed, these insects (especially the *Mantis siccifolia*) have obtained much notice by their resemblance to the leaves of trees, so as to be mistaken at a little distance for them. Some early travellers have thus declared that they saw the leaves of trees become living creatures. Many of the natives of South America believe that they grow like the leaves on the trees, and that when they have arrived at maturity, they loosen themselves, and fly or crawl away. From the name of Creeping Leaf, it is not unlikely that the South Africans have a similar notion.

In the same quarter, if the Mantis alights upon a traveller, he immediately becomes, in the eyes of the natives, a kind of saint—one especially favoured by Heaven.

One missionary, of the name of Evan Evans, gives an account of a conversation which he had with the Hottentot driver of his waggon, which seems to make out the claim of the Mantis to be regarded as the god of the Hottentot. The driver directed his attention to "a small insect which the farmers call the Hottentot's god," and alluded to the notions he had in former times connected with it:—"I asked him, 'Did you ever worship this insect then?' He answered, 'O yes, a thousand times; always before I came to Bethelsdorf. Whenever I saw this little creature, I would fall down on my knees before him and pray.' 'What did you pray to him for?' 'I asked him to give me a good master, and plenty of thick milk and flesh.' 'Did you pray for nothing else?' 'No, Sir; I did not then know that I wanted anything else.'.....'Whenever I used to see this animal' (holding the insect still in his hand), 'I used sometimes to fall down immediately before it; but if it was in the waggon-road or in a footpath, I used to push it up as gently as I could, to place it behind a bush, for fear a waggon should crush it, or some men or beasts should put it to death. If a Hottentot, by some accident, killed or injured this creature, he was sure to be unlucky all his lifetime, and could never shoot an elephant or a buffalo afterwards.'"

In its private character the Mantis has little claim to the reverence which it has acquired. A more pugnacious and rapacious little creature does not live, and its cannibal propensities—the disposition to prey on its own species—have been established beyond a doubt. If two or more be shut up together, they will attack each other with the utmost animosity, until one of the combatants falls in the conflict. Dr. Smith, in his 'Tour on the Continent,' speaks of a gentleman who caught a male and female Mantis, and put them together in a glass vessel. The female, which in this, as in most other kinds of insects, is the largest, after a while devoured first the head and upper parts of her companion, and afterwards the rest of the body. Several experiments have proved that they will devour each other less from hunger than from savage wantonness. Roësel, who kept some of these insects, remarks that in their mutual conflicts their manœuvres very much resemble those of hussars fighting with sabres; and sometimes one cleaves the other through with a single stroke, or severs the head from the body. During the engagement their wings are generally expanded; and when the battle is over, the conqueror devours his antagonist.

Aware of this quarrelsome temper of the Mantis, the Chinese use them for a similar entertainment to that which is afforded by making cocks and quails fight together; for there is little doubt that it is this insect which is intended by Mr. Barrow, when, in describing the gambling propensities of the Chinese, he writes:—"They have even extended their inquiries after fighting animals into the insect tribe, and have discovered a species of locust that will attack each other with such ferocity as seldom to quit their hold without bringing away at the same time a limb of their antagonist. These little creatures are fed and kept apart in bamboo cages; and the custom of making them devour one another is so common, that during the summer months scarce a boy can be seen without his cage of grasshoppers."

We ought not to conclude this paper without letting the reader into the secret of the praying attitude which has attracted so much attention to the *Mantis*. It has been found by careful observation that this is no other than the posture which the creature assumes for the purpose of seizing upon its prey, for which, after fixing its eyes upon the victim, it will thus wait patiently, even for hours.



[Bursting of St. Anthony's Dyke.—From an etching by P. Nolpe *]

INUNDATIONS IN HOLLAND IN 1825.

A GREAT part of the fertile and cultivated soil of Holland, as is well known, has been anciently redeemed from the ocean, or from the stagnant waters of the rivers by which it is intersected; and this uncertain domain is still, at short intervals, claimed by its former masters. Its present proprietors, therefore, unable to rely on their prescriptive rights, are obliged always to guard their possessions with vigilance, and often to repel encroachments with activity and vigour. From the port of Ostend to the mouth of the Ems—along a line of coast which, including the circuit of the islands at the mouth of the Scheldt, the Meuse, and the Zuider Zee, extends several hundred miles—there is no barrier against the invasion of the sea, except a continued range of dykes or mounds of sand, raised by the art and preserved by the industry of man. By miracles of enterprise and perseverance the Hollanders have thus been able to say to the raging ocean, without presumption or blasphemy, "Thus far shalt thou come, and no farther, and here shall thy proud waves be stayed." Within this line we find fertile fields, extensive meadows, magnificent pleasure-grounds, noble parks, smiling villages, and populous cities. No landscape is more rich; no country of the same extent supports such a number of inhabitants, or contains such an accumulation of the fruits of industry and the materials of happiness. From the top of several of the town spires you can see nearly all the great cities of Holland, spread out before you on a surface as level as the ocean; and can trace the line of the ocean itself by the range of yellow sand eminences destined to act as a bulwark against its waves. At flood-tide, or with the wind blowing in a particular direction, the level of the waters beyond the dykes becomes higher than the dry land within them. You may, therefore, hear the waves beating against the barrier above your head, and see that nothing but its height and strength can protect you from their violence. To this enemy from without, the Dutch have to add one frequently no less terrible from within. "Your kingdom," said Napoleon to his brother Louis, "may be defined as the *alluvium* of the Rhine, the Meuse, and the Scheldt; the great arteries of my empire." The contents of these great "arteries" are drained off in a thousand minute ramifications (so as to form canals and lines of communication between city and city, between village and village, nay, even between street and street, and field and field), and pass with diminished power, and by almost imperceptible degrees, into the German Ocean or the Zuider Zee. But when their volume is violently increased by storms in the higher regions of Europe, or their discharge interrupted by tempests on the coasts, a great part of the country is exposed to as much danger from their overflow as from the agitated waters of the sea. The soil of Holland, thus rescued and protected, bears everywhere the marks of its origin. It consists of either pure sand, as if it had recently been raised from the bottom of the sea: or of a mossy black mould, as if formed from the inundation of a river. The care of supporting the dykes and protecting the land, which is liable to be inundated several times in the year by the sea or the rivers, is intrusted to a permanent administration called the *Waterstaat*. Obliged to watch their dykes, sluices, and water-works, as the garrison of a besieged fortress stations sentinels on its ramparts, this body must be always ready and always efficient. But notwithstanding all the care and all the precautions taken by this well-organised body of inspectors and engineers to resist or to repel their watery enemy; notwithstanding the ample funds and great physical force placed at their disposal, and ready to be employed at their bidding, the violence of the

* The print is described as "taken from the life," and as representing the bursting of St. Anthony's Dyke, just without Amsterdam, occasioned by a high-water flood on the 5th of March, 1651, and which was three inches higher than a previous remarkable high-water in 1570. Through this breach the water burst so impetuously as to force away every obstacle in its course, and covered the country to the depth of thirty feet. Even the Diemermeer Dyke was broken, and inundated to the depth of sixteen feet, so that the water ran over St. Anthony's Mart and the New Dyke, to the great damage of the landed proprietors and neighbourhood generally.

elements often sets all their vigilance, skill, and power at defiance, sweeping away their strongest bulwarks, and threatening their country with a general inundation.

The end of the year 1824 and the commencement of 1825 will be long remembered in other parts of Europe as well as Holland. About the beginning of the winter months, extraordinary storms prevailed over all parts of the Continent, but particularly in its higher regions and mountain-ranges. Water-spouts and torrents of rain descended in Switzerland and the Black Forest, not only sufficient to damage the districts on which they fell, but to overthrow dykes and embankments, to cover whole valleys, and sweep away whole villages, with their inhabitants and cattle. Wirtemberg, Baden, and the countries situated near the Alps first felt this dreadful visitation. The valleys of the Necker and the Rhine, towards Heidelberg and Mannheim, were entirely overflowed and dreadfully damaged. Similar calamities were experienced in Hanover, Prussia, and other parts of Germany. The people of Holland heard such accounts with dismay, particularly the intelligence of the ravages committed by the Rhine in the upper part of his course. In his irresistible fury he had overleaped or demolished his embankments a thousand feet above the level of the sea; and what might not be dreaded from the force of his accumulated waters descending on the Dutch territory, the highest point of which is only about thirty-two feet above the same level. The height of their dykes and causeways along his banks is not more than twenty-four feet; and if the water exceeded this elevation, their wealthiest towns and most prosperous villages must have been overwhelmed in one common ruin. The water in most places had actually ascended to the top of the dykes. In some parts of the country these ramparts threatened to yield, in others they had even been slightly broken: every stream was covered with wrecks; every canal leaned against a tottering embankment. A wind suddenly springing up, and blowing these accumulated waters into the sea, saved the country from the threatened inundation. This blessed wind was aided by the most active exertions of the *Waterstaat*. Breaches in the dykes were filled up, the windmills assisted the discharge, and the threatening danger was for the present averted.

It was not for nearly six weeks afterwards, and then not from the same quarter, that devastation and misery came. The 3rd, 4th, and 5th of February, 1825, were the fatal days for the coast of Holland, and a tempest occurring at spring-tide was the cause. On the 1st and 2nd of that month the wind blew from the south-west, and the weather was extremely mild. The waters of the canals and rivers were thus discharged into the sea in great abundance, and without danger. On the evening of the 2nd the wind veered round to the north-west, where it continued till the night of the 5th. The direction of the wind, the violence of the storm, and the state of the tide, caused at Amsterdam, and along the whole sea-coast, the greatest alarm on the morning of Wednesday the 3rd. The flood of Wednesday rose higher than any ordinary spring-tide. But a greater tide was still to be dreaded, and on the morning of Friday (the 5th) the water rose twenty-six inches higher than on any former day. The wind still continued in the north-west, accompanied with storms of thunder and lightning; so that from the direction of the gale the waves did not subside at low-water to more than half their usual ebb. The tide of Friday evening (the 5th) was to be the highest, and was looked forward to with proportional alarm. It rose higher by six inches than during the destructive tempests of 1808, and higher than any of which there are authentic records. The cause of this no doubt was the accumulation of waters in the North Sea and Zuider Zee, by the prevalence of south-west winds, and their precipitation on the Dutch coast by the change of their direction from south to north. In the night of the 5th all was confusion and terror at Amsterdam. In some places the waves had surmounted their barriers, and the cellars of some of the lower parts of the town were flooded. In other places the water had got up to the doors. Half an hour longer of continued storm, or the slightest rise in the tide, must have laid the greatest part of the Dutch capital and of its treasures under water. Nothing could have prevented this catastrophe but the change of wind, which suddenly took place a little after midnight.

The capital was thus saved; but as soon as the tempest permitted communication from without, the cry was heard from the opposite side of its harbour that a *door-braak* of the dykes had taken place, and that the fairest portion of its neighbourhood was inundated.

On the 4th the violence of the waves had burst through the causeway or mole of Durgerdam, a village on the Zuider Zee, about six or seven miles east of Amsterdam, and poured irresistibly upon North Holland, spreading from the dyke which encloses one side of the harbour of Amsterdam to the beautiful town of Alkmaar on the north-west, to Edam on the east, and to Beverwyk on the west. The inundation thus spread over more than a third part of North Holland, extending upwards of twenty miles from north to south, and about twenty-five miles from east to west, and covering a space of more than twice the size of the sea of Haarlem, which is stated to contain about sixty thousand acres. Within this circuit are the considerable towns of Edam, Monnikendam, and Purmerende, which became a prey to the deluge; the celebrated village of Broek, the manufacturing villages of Wormerveer, Zaaddyk, and many others were likewise overflowed. The inundation did not, of course, rise to an equal height, or produce an equal havoc over the whole of this space. Two or three of its most fertile districts were entirely protected by their own local dykes, propped up, repaired, and defended by the enterprise and activity of the peasants. In some other quarters of it the waters did not rise so high as materially to damage the houses, while over a large portion of its southern and eastern divisions the waves mounted nearly to the tops of houses and trees, and produced a total devastation. The wretched inhabitants were in general saved by the rapidity of their flight to the nearest little eminences above water, or the activity of the boatmen of Amsterdam, joined to those of their own neighbourhood. A great portion of the cattle were likewise rescued by the same means; so that by this part of the inundation not more than five or six persons were drowned, and about a thousand head of cattle lost. The damage, however, in other respects was immense.

[To be continued.]

INDIAN ROSES AND OTTO (ATTAR) OF ROSES.

There is a town called Ghazeepore, situated a few miles north-eastward of Benares in India, which has gained a distinguished name for the *attar of roses* prepared there; the cultivation of the roses, and the distillation of the attar, forming important parts of the employment of the inhabitants.

It is probably known to most persons that roses are capable of imparting their fragrant odour to water, by a particular mode of treatment, and that *rose-water* is the result; but it may not be so well known that the attar is a kind of cream or oily essence, which collects

at the top of the distilled rose-water. The mode in which these products are obtained, and the commercial arrangements by which the trade is governed, will afford us subjects for a few interesting details.

The cultivators of the roses are seldom the same parties as the manufacturers of the attar and rose-water; the roses being generally purchased by the latter at a particular stage in their growth. In the vicinity of the town of Ghazeepore are about three hundred *beegahs* (each beegah being equal to about half an acre) of land laid out in small detached fields. These fields constitute rose-gardens, and are surrounded on all sides by high mud-walls and prickly-pear fences, to keep out cattle. The gardens belong to proprietors called Zemindars, who plant the rose-trees (one thousand to each beegah of ground), and then let them out annually, at the rate of about five rupees per begah of land, and twenty-five rupees for the rose-trees—the rupee being equal to about two shillings English. The cultivator thus hires the ground, as well as the young rose-trees planted on it; and his object is to procure such a number of roses from the trees as will pay this rental, and afford him a remunerating price for his time and trouble in attending to the cultivation. If the season be favourable, it is expected that the thousand rose-trees to each beegah of ground will yield a *lac*, or one hundred thousand roses; and this quantity will generally bring in the market from forty to seventy rupees.

At the commencement of the rose season, about the month of March, when the rose-trees come into flower, the distillers from Ghazeepore, of whom there are about thirty or forty, proceed to the gardens, and arrange for the purchase of the roses. The zemindars or land-owners, the cultivators, and the distillers, all meet together; and, according to the relation between supply and demand, a price is agreed upon, by which the subsequent purchases are regulated. After a purchase is made, men, women, and children proceed to the gardens early in the morning, pluck the roses, and put them into large bags, and carry them to the houses of the purchasers.

Dr. Jackson, the Company's civil surgeon at Ghazeepore, describes the distilling apparatus as being very simple. It consists of a large copper or iron boiler, well tinned, and capable of holding from eight to twelve gallons, having a large body with a rather narrow neck, and a mouth about eight inches in diameter. On the top of this is fixed the head of the still, which is nothing more than an old *dekchee*, or cooking vessel, with a hole in the centre to receive the tube or worm; it is well luted to the boiler by a cement of clay, or of flour and water. The tube is composed of bamboo, coated on the outside to prevent the escape of the vapour; one end of it is fastened to the opening in the still, and the other end descends into a long-necked vessel or receiver called a *bhubka*. This latter is placed in a vessel of cold water, which, as soon as its temperature is raised by the condensation of the vapour in the still, is changed, and replaced by a fresh supply of cold water.

The rationale of this arrangement is, that when roses are put into the boiler, water added to them, and both raised to a high temperature, the steam which evaporates from the water, carrying with it the odoriferous principle of the roses, passes up the still, and thence through the tube into the long-necked vessel: here the action of the cold water on the exterior of the vessel condenses the vapour, and the result is *rose-water*. Colonel Polier states the proportion as follows:—Forty pounds of fresh roses, with their calices attached, but the stems cut close, are put into the boiler with sixty pounds of water. The mass is then well mixed together with the hands, and a gentle fire is made under the boiler. When the water begins to grow hot, and steam to arise, the cap or upper part is put on, and the pipe attached. When the impregnated water begins to pass over into the receiver, and the apparatus is very hot, the fire is lessened by degrees, and the distillation continued till thirty pounds of rose-water are produced, which generally takes about four or five hours. The rose-water thus produced is poured again into a fresh quantity (forty pounds) of roses; and from fifteen to twenty pounds of more richly impregnated rose-water results.

Dr. Jackson's account of the proceedings differs in some slight details from the preceding; but we need not notice the difference here. We proceed to the method of procuring the attar from the rose-water. The rose-water is put into a large metal basin, which is covered with wetted muslin to prevent the ingress of insects or dust. This vessel is let into damp ground about two feet, and allowed to remain there a whole night. In the morning, when the vessel is taken up and opened, a thin film of congealed creamy substance is found on the surface; this is the attar, which is carefully skimmed off by means of a thin shell or some similar instrument, and placed in a small phial. When a certain quantity has thus been obtained, the water and sediment are separated from the clear essence or attar, the first by cold and the second by heat. The attar being made to congeal by exposure to cold air, the water is easily poured from it; and afterwards, by melting the attar, the sediment falls to the bottom, and may then be removed. The attar, kept in small phials, at first presents a pale greenish hue, but this changes in a few weeks' time to a pale-yellow. The price at which this costly perfume is sold is enormous. Dr. Jackson states:—"From one *lac* of roses, it is generally calculated that one hundred and eighty grains, or one *tolah*, of attar can be procured: more than this can be obtained if the roses are full-sized, and the nights cold to allow of the congelation. The attar purchased in the bazar is generally adulterated, mixed with sandal-oil or sweet-oil. Not even the richest native will give the price at which the purest attar alone can be obtained: and the purest attar that is made is sold only to Europeans. During the past year (1838), it has been selling from eighty to ninety rupees the *tolah*; the year before, it might have been purchased for fifty rupees." Now taking the rupee at two shillings English, and the highest price mentioned above, viz. ninety rupees for one hundred and eighty grains, we have the startling price of one shilling per grain for this substance, or six times the value of pure gold. Colonel Polier makes the *tolah* equal to about half an ounce English, which would give the price per grain about nine-pence, instead of one shilling.

That such a costly substance should be adulterated for commerce, is what we may very reasonably suspect. Colonel Polier says that it is customary to add to the roses, when put into the still, a small quantity of sandal-wood raspings; this wood contains a great deal of essential oil, which comes over freely in the common distillation, and, mixing with the rose-water and essence, becomes strongly impregnated with their perfume. In Cashmere, instead of using sandal-wood, they sometimes employ a sweet-scented grass, which does not communicate any unpleasant scent, and gives the attar a high clear green colour. Dr. Jackson supposes that the best rose-water sold in the bazar at Ghazeepore bears the proportion of about one thousand roses to a *seer* of water, a seer being about two pounds English avoirdupois; but most generally a larger quantity of water to the same number of roses is the proportion from whence the rose-water is obtained, and even from this the attar, comprising the most fragrant part, has been removed.

One of the modes of adulteration adopted in Ghazeepore is, to put a considerable quantity of sandal-oil into the receiver before the distilling process commences; and when it is completed, the oil in the receiver is separated from the distilled water. The water, although robbed of much of its odoriferous principle by the oil, is nevertheless sold in small bottles as rose-water, while the fragrant oil is sold as *sandal-attar.* The sediment obtained in preparing the true attar is also preserved, as a strongly odorous substance.

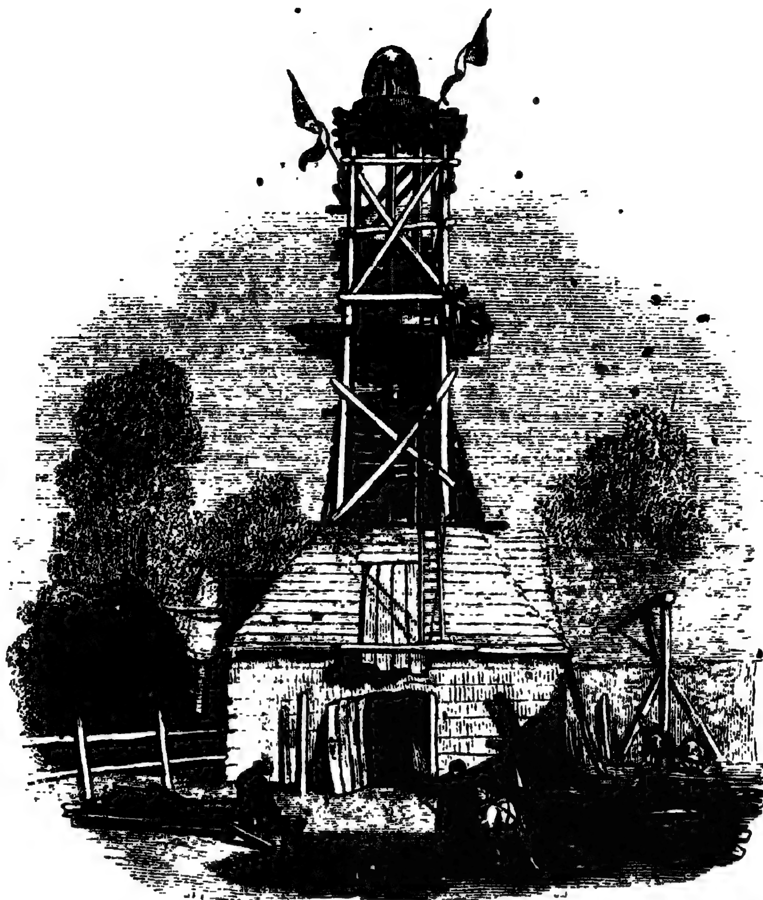
Dr. Jackson considers the value of the roses sold for the manufacture of rose-water at Ghazeepore to amount to from fifteen to twenty thousand rupees per annum; and from the usual price charged for the rose-water, he estimates the profit at forty thousand rupees. Respecting the use of the rose-water among the natives, he observes, "The chief use the natives appear to make of the rose-water, or the sandal-attar, as they term it, is at the period of their festivals and weddings. It is then distributed largely to the guests as they arrive, and sprinkled in profusion in the apartments. The natives are very fond of using the rose-water as medicine, or as a vehicle for other mixtures; and they consume a good deal of the petals for the conserve of roses, or *Goolcand*, as they call it. A large quantity of rose-water is sold at Benares, and many of the native rajahs send over to Ghazeepore for its purchase. Most of the rose-water, as soon as distilled, is taken away, and after six months from the termination of the manufacture there are not more than four or five places where it is to be met with."

The Medicine-bag of the Indians.—The medicine-bag, then, is a mystery-bag; and its meaning and importance necessary to be understood, as it may be said to be the key of Indian life and Indian character. These bags are constructed of the skins of animals, of birds, or of reptiles, and ornamented and preserved in a thousand different ways, as suits the taste or freak of the person who constructs them. These skins are generally attached to some part of the clothing of the Indian, or carried in his hand. Every Indian in his primitive state carries a medicine-bag in some form or other, to which he pays the greatest homage, and to which he looks for safety and protection through life—and, in fact, it might almost be called a species of idolatry; for it would seem, in some instances, as if he actually worshipped it. Feasts are often made, and dogs and horses sacrificed to a man's medicine; and days and even weeks of fasting and penance of various kinds are often suffered to appease his medicine, which he imagines he has in some way offended. The manner in which this curious and important article is instituted is this: a boy at the age of fourteen or fifteen years is said to be making or "forming his medicine," when he wanders away from his father's lodge, and absents himself for the space of two or three, and sometimes even four or five days; lying on the ground in some remote or secluded spot, crying to the Great Spirit, and fasting the whole time. During this period of peril and abstinence, when he falls asleep, the first animal, bird, or reptile of which he dreams (or pretends to have dreamed, perhaps), he considers the Great Spirit has designated for his mysterious protector through life. He then returns home to his father's lodge and relates his success; and, after allaying his thirst and satiating his appetite, he sallies forth with weapons or traps, until he can procure the animal or bird, the skin of which he preserves entire, and ornaments it according to his own fancy, and carries it with him through life for "good luck" (as he calls it); as his strength in battle—and in death his guardian *spirit*, that is buried with him; and which is to conduct him safe to the beautiful hunting-grounds which he contemplates in the world to come. The value of the medicine-bag to the Indian is beyond all price; for, to sell it, or give it away, would subject him to such signal disgrace in his tribe, that he could never rise above it; and again, his superstition would stand in the way of any such disposition of it, for he considers it the gift of the Great Spirit. An Indian carries his medicine-bag into battle, and trusts to it for his protection; and if he loses it thus, when fighting ever so bravely for his country, he suffers a disgrace scarcely less than that which occurs in case he sells or gives it away; his enemy carries it off and displays it to his own people as a trophy; whilst the loser is cut short of the respect that is due to other young men of his tribe, and for ever subjected to the degrading epithet of "a man without medicine," or "he who has lost his medicine," until he can replace it again, which can only be done by rushing into battle and plundering one from an enemy whom he slays with his own hand.—*Catlin's North American Indians.*

The Natives of New Zealand.—Their services for all sorts of purposes were always at our command for a moderate remuneration. We employed them chiefly in shooting, fishing, hunting, cutting fire-wood, and building houses. At first they were content to be paid with food only. By degrees their wants increased, and they required various goods, such as tobacco, clothing, and hardware. All this took place at our first squatting settlement, on the banks of the Hutt; latterly, after the bulk of the settlers were established at Wellington, the natives had begun to require money wages in return for their labour. A similar change took place with regard to trade. At first all our exchanges with the natives were made by barter only, but long before my departure they had begun to comprehend the use and value of money. This knowledge at last extended in some cases to the regular employment of our currency. One native resident at Wellington purchased a horse which had been imported from New South Wales, and used to let it out for hire; and another had an account with the bank. Great numbers were in possession of money, which they usually carried about with them in a handkerchief tied round the neck. During the first months of our intercourse with the natives, they usually carried muskets; but apparently from mere habit, and not on account of any fear of violence from us. We never carried arms, and the custom has now been quite abandoned by the natives of Port Nicholson. The best proof, however, of their own feeling of security is, that they are gradually destroying the stockade defences of their villages. Not that they ever feared, probably, that we should attack them; but they feel that our presence is a perfect security against aggression from distant and hostile tribes. It seemed to me that the whole character of this people was undergoing a rapid change; and that in all probability the next generation will to a great extent amalgamate with the colonists.—*Account of the British Settlements in New Zealand, by the Hon. H. W. Petre.*

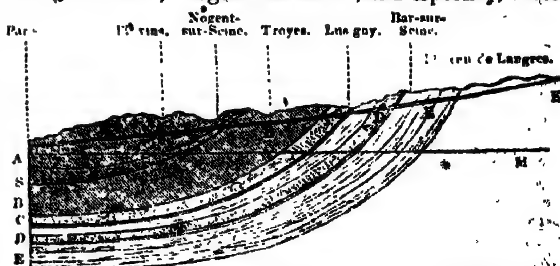
Iron-Trade of America.—There are no data by which we can ascertain the quantity of iron produced in the United States prior to 1810. At that time, according to the official returns, the quantity of bar-iron made in this country was 24,171 tons, then valued at 2,610,778 dollars, of which 10,969 tons were made in Pennsylvania. From that time to 1830, the quantity had increased to 112,866 tons; in addition to which, 25,250 tons of castings were also made—the value of both amounted to 13,329,760 dollars: in making this quantity, 29,254 men were employed, and 146,273 subsisted, whose annual wages amounted to 8,776,120 dollars, and that in their support the farmer furnished food to the value of 4,000,490 dollars. The average quantity of hammered iron imported into the United States from 1821 to 1830 was about 26,200 tons annually, and of rolled iron about 5600 tons—making together 31,800 tons, valued at 1,762,000 dollars. The whole quantity of hammered and rolled iron consumed in the United States in 1830 may be estimated at about 141,666 tons. The value of the various foreign manufactures of iron consumed in this country, on an average, from 1821 to 1830, was about 4,000,000 dollars yearly—making the whole amount of foreign iron and its manufactures annually consumed in the United States, say 5,762,000 dollars. If the whole quantity made in the United States in 1830 were computed in pig-iron, it would amount to 191,536 tons—produced from 239 furnaces, averaging fifteen and a half tons each furnace per week—two-fifths of this quantity were made in Pennsylvania. The quantity made in all the States in 1837 may be fairly taken at 250,000 tons.—*Scrivenor's Hist. of the Iron-Trade.*

American and English Women contrasted.—Our *girl*, with her delicate features and nymph-like figure, is far more lovely in her first freshness than the English; but the English woman, in her ripeness and full development, far surpasses ours. She is superb from twenty to forty-five.—*Miss Sedgwick.*



THE ARTESIAN WELL AT GRENELLE, PARIS.

ARTESIAN Wells are so called from the probability that they were first constructed in Artois, although, from the authority of several ancient writers, they appear to have been in use in the earliest ages. The Artesian well at Grenelle, of which the above wood-cut is a representation, has lately been completed, after eight years of constant labour and repeated difficulties. The south-western portion of Paris was but very poorly supplied with water, and at Grenelle, a suburb immediately adjoining the city, this deficiency was so seriously felt that it became an object of the greatest importance to find means of remedying the evil. M. Mulot, an experienced geologist, being consulted as to the practicability of constructing a well on the Artesian principle, stated that the perforation would necessarily be of extraordinary depth, owing to the nature of the district. We extract from the 'Magasin Pittoresque' the following geological description of the basin of Paris:—"Two conditions, as it is well known, are requisite for the formation of an Artesian well: first, the existence of a pervious stratum, such as gravel, placed between two impervious strata, such as clay; secondly, the percolation of the water through the pervious stratum from a point higher than that to which it is required to rise. The basin of Paris is in the form of a hollow plate (B, B) formed by a stratum of chalk. In this basin have been successively deposited the tertiary strata, in the centre of which Paris is situated. On a circular space bounded by the towns of Laon, Mantes, Blois, Sancerre, Nogent-sur-Seine, and Epernay, these



[A, A, Tertiary strata above the chalk; B, B, chalk or cretaceous limestone; C, C, D, D, green-sand and clay; E, E, oolite and Jura limestone; A, E, general slope of the country from Langres to Paris; A, M, level of the sea.]

strata appear at the surface, and conceals the chalk, but on the other side of the towns we have mentioned, the edge of the basin being passed, the chalk is found generally on the surface. If we look at the order in which the tertiary strata occur, we shall then comprehend the obstacles M. Mulot had to overcome, and the probability of the ultimate success of his undertaking. Leaving unnoticed the surrounding hills, we will examine the nature of the soil which composes the

Plain of Grenelle. On the surface it is formed of gravel, pebbles, and fragments of rock, which have been deposited by the waters at some period anterior to any historical record. Below this surface M. Mulot knew, by geological inductions and previous experience, that at Grenelle marl and clay would be found in place of the limestone which in general forms the stratum immediately beneath. M. Mulot was aware he must bore about four hundred and forty yards in depth, before he should meet with the sources (S), which flow in the gravel below the limestone and supply the wells of St. Ouen, St. Denis, and Stains. Beneath the marl and clay, the boring-rods had to perforate pure gravel, plastic clay, and finally chalk, which forms the bottom of the basin in which the tertiary strata have been deposited. No calculations or geological knowledge could determine the thickness of this stratum of chalk, which from its powers of resistance might present a nearly insurmountable obstacle. The experience obtained in boring the wells of Elbeuf, Rouen, and Tours was in this respect but a very imperfect guide. But supposing this obstacle to be overcome, was he sure of finding a supply of water below this mass of chalk? In the first place, the strata (C, D) below the chalk possessed, as we shall see, all the necessary conditions for producing Artesian springs, namely, successive layers of clay and gravel, or pervious and impervious beds. M. Mulot confidently relied upon his former experience of the borings of the wells at Rouen, Elbeuf, and Tours, where abundant supplies of water had been found below the chalk between similar strata of clay and gravel.

But one other condition is requisite to effect the rising of the water in an Artesian well, viz. that the point of infiltration should be higher than the orifice above which the water is to rise. This also was the case at Grenelle. In fact, M. Arago had shown that the water of the spring in question would necessarily rise to the surface, because, in the well at Elbeuf, which is nearly nine yards above the level of the sea, the water rises from twenty-seven to twenty-nine yards above the surface of the earth, and consequently from thirty-six to thirty-eight yards above the level of the ocean. Now, as the orifice at Grenelle is only thirty-four yards above this same level, it follows that if the same spring were met with, the water must rise above the surface of the earth at Grenelle.

The necessary works were now commenced with boring-rods about nine yards long, attached to each other, and which could be raised or lowered by mechanical means; and an ingenious method was adopted for giving them a circular motion. The diameter of the bore hole was about six inches. The instrument attached to the end of the lowest boring-rod was changed according to the different strata which were successively reached, the form adapted for passing through the softer materials of the surface being unsuitable to boring through the chalk and flint, a hollow tube being used for the former, while the latter was penetrated by a chisel-shaped instrument. The size of the rods diminished in proportion to the depth, and as the subterranean water was not reached so soon as was expected, it became requisite five several times to enlarge the diameter of the bore, to admit of the work being successfully continued. Accidents occurred also, which tried the utmost patience of the projectors. In May, 1837, when the boring had extended to a depth of four hundred and eighteen yards, the hollow tube, with nearly ninety yards of the boring-rods attached to it, broke, and fell to the bottom of the hole, and it was necessary to extract the broken parts before any further progress could be made. The difficulty of accomplishing this may be conceived when it is stated that the different fragments were not withdrawn until after the lapse of fifteen months. A description of the ingenious mode by which this was effected would be too technical for our work. Again, in April, 1840, in passing through the chalk, the chisel attached to the boring-rod became detached, and before it could be recovered several months were spent in excavating round it. A similar occurrence created an obstacle which impeded the work for three months, but instead of being withdrawn, the detached part was driven literally into the stratum, which happened to be gravel. At length, in February, 1841, after eight years' labour, the rods suddenly descended several yards: they had pierced the vault of the subterranean waters of which M. Mulot had been so long in search. In the course of a few hours the water rose to the surface, and discharged itself at the rate of 600,000 gallons per hour. The depth attained was six hundred and two yards, or about three times the height of St. Paul's. The pipe by which the water reaches the surface has recently been carried to a height nearly on a level with the source of supply. The pipe, as it rises from the ground and the scaffolding which supports it, are shown in the cut. At present the water flows into a circular iron reservoir at the top of the scaffold, and it is thence conveyed by another pipe to the ground. The water is of good quality, and well adapted for culinary and domestic purposes. There is no fear of the supply proving deficient, as it is derived from the infiltration of a surface of country nearly two hundred miles in diameter. The Artesian wells of Elbeuf, Tours, and Rouen, which were formed many years ago, flow in an invariable volume. The ancient Artesian well at Lillers, in the Pas de Calais, has for above seven centuries furnished a constant and equable supply. When the source of supply is less extensive, these wells may be subject to variations, but the probability of this may generally be foreseen by the geologist and the engineer.

The opportunity of ascertaining the temperature of the earth at great depths was not neglected during the progress of the works at Grenelle. Thermometers placed at a depth of thirty yards in the wells of the Paris Observatory invariably stand at 53° Fahrenheit. In the well at Grenelle the thermometer was 74° at a depth of four hundred and forty-two yards, and at five hundred and fifty yards it stood at 79°. The depth attained being six hundred and two yards, the temperature of the water which rose to the surface was 81°, corroborating previous calculations on the subject. Now that the patient labour of so many years is brought to a close, our neighbours regret that it was not necessary to go to a depth of about one thousand yards for a supply, as the water would then have been at a temperature of 104°, and immediately applicable to bathing establishments and other places in which warm water is required.

CHAUCER'S PORTRAIT GALLERY

THE SHIPMAN.

"A SHIPMAN was there woned* far by west;
For ought I wote he was of Dartemouth.
He rode upon a rouncie † as he couthe ‡,
All in a gown of falding § to the knee;
A dagger hanging by a lace had he
About his neck, under his arm adown.
The hotte summer had made his hue all brown,
And certainly he was a good fellów.
Full many a draught of wine he hadde draw
From Bourdeaux ward, while that the chapmen sleep;
Of nice conscience took he no keep.

* Lived.
† A common hackney horse.
‡ That is to say, as well as he was able.
§ A kind of coarse cloth.

If that he fought, and had the higher hand,
By water he sent them home to every land.
But of his craft to reckon well his tides,
His streames and his strandes him besides,
His herberow*, his moon, and his lodemanage†,
There was none such from Hull unto Carthage.
Hardy he was and wise, I undertake;
With many a tempest had his beard been shake.
He knew well all the havens as they were
From Gothland to the Cape de Finisterre,
And every creek in Britain and in Spain:
His barge ycleped was the Magdalen."

Commerce about and a little prior to the period of Chaucer made so great an advance, that the Shipman was doubtless an important, and, considering the dangers of his avocation and the variety of adventures he was constantly meeting with, a very interesting character. The magnet only became known in Europe towards the end of the twelfth century, and did not, it is supposed, get into familiar use before the middle of the thirteenth. Chaucer, indeed, and his Scottish contemporary Barbour, are the first British writers who notice it. From the description we perceive some of the channels in which the commerce of the fourteenth century flowed. English vessels passed to and fro between our country and France, Spain, and the places along the coast from "Gothland to Finisterre;" and among the ports Hull and Bourdeaux are particularly mentioned. A peculiarity of the mercantile navy at this period was its being frequently employed in warlike expeditions; and to that circumstance we owe the preservation of many particulars as to its extent, &c. When Henry III., in 1253, ordered all the vessels in England to be seized and employed against the rebel barons in Gascony, their number, according to Matthew Paris, was above a thousand, of which three hundred were large ships. When Edward III. was besieging Calais, he had with him 710 vessels belonging to English ports, with crews to the number of 14,151 persons. It may be interesting to see the relative proportion of the men and ships furnished by the different places in England, as it may be taken as a tolerably exact criterion of their relative maritime importance. London sent 25 ships with 662 men: Margate, 15 with 160: Sandwich, 22 with 504; Dover, 16 with 336; Winchelsea, 21 with 596; Weymouth, 20 with 264; Newcastle, 17 with 414; Hull, 16 with 466; Grimsby, 11 with 171; Exmouth, 10 with 193; Dartmouth, 31 with 757; Plymouth, 26 with 603; Looe, 20 with 325; Fowey, 47 with 170; Bristol, 24 with 608; Shoreham, 20 with 329; Southampton, 21 with 572; Lyme, 16 with 182; Yarmouth, 43 with 1095; Gosport, 13 with 403; Harwich, 14 with 283; Ipswich, 12 with 239; and Boston, 17 with 361. In the whole there are scarcely twenty men to a ship, so that the vessels generally must have been small. Later in the same century, and during Chaucer's life-time, 1360, Edward issued a similar order to that before mentioned, for arresting all the vessels in his dominions; the largest were now directed to carry forty mariners, forty armed men, and sixty archers. Such a ship must have been of very respectable dimensions for its more peaceful and legitimate avocations. Of the kind of articles which formed the staple commodities of commerce during the period of the poet, we have a sufficiently exact account in the Records of the Exchequer for the year 1354, the oldest document we possess of the kind. From them it appears that the exports of that year were—31,651½ sacks of wool, at 6*l.* per sack; 3036 cwt. of wool, at 40*s.* per cwt.; 65 woolfels, at a total value of 21*s.* 8*d.*; hides to the value of 89*l.* 5*s.*; 4774½ pieces of cloth, at 40*s.* each (of the same kind as the Shipman's "falding" perhaps); and 8061½ pieces of worsted stuff, at 16*s.* 8*d.* each: total value of the exports, 212,338*l.* 5*s.*, paying customs to the amount of 81,846*l.* 12*s.* 2*d.* From these figures it appears that wool constituted about thirteen-fourteenths of the entire exports of England. The imports consisted of 1831 pieces of fine cloth, at 6*l.* each; 397¾ cwt. of wax, at 40*s.* per cwt.: 1829½ tuns of wine, at 40*s.* per tun; and linens, mercery, grocery, &c. to the value of 22,943*l.* 6*s.* 10*d.*: making a total value of 38,383*l.* 16*s.* 10*d.* The wines here referred to, and which appear to have formed the chief commodity with which our shipman was concerned, were those of France, Spain, Greece, and Syria.

For ought he knows, says the poet, the shipman was of Dartmouth: a glance at the comparative importance of Dartmouth among the chief maritime places of England, as shown above, will explain this remark. Dartmouth contributed a more important total of ships and men than any other place in England, with the exception of Yarmouth. It was, no doubt, looked on through the country as peculiarly the seaman's home. Shipmen and Dartmouth were ideas probably as familiar to our countrymen in Chaucer's time as sailors and Portsmouth now. This position Dartmouth owed, no doubt, to the convenience of its harbour, which can still accommodate 500 ships. As to Bourdeaux, where the Shipman has been accustomed to leave such a very equivocal reputation behind him, we may observe that it then belonged to the English, and that wine is still the staple export of the city. The touches of character by which Chaucer so happily marks all his creations are not wanting here:—the Shipman's riding as well as he could; no doubt succeeding as well as your true seaman is generally accustomed to succeed on horseback:—the brown hue, and the beard that has been shaken by many a tempest,—all show how accurately Chaucer drew from the life, how he must ever have described that alone which he saw.

* Harbourage.

† Even so late as the reign of George III. we find this word in use in the sense in which Chaucer applies it, namely, pilotage. See the stat. 3 Geo. I., c. 13. From the same idea, that of *leading*, the north star is called the *lode*-star, and the magnet the *load*stone.

Life of the Husbandman in Hindostan.—The husbandman rises with the earliest dawn, washes, and says a prayer, then sets out with his cattle to his distant field. After an hour or two he eats some remnants of his yesterday's fare for breakfast, and goes on with his labour till noon, when his wife brings out his hot dinner; he eats it by a brook or under a tree, talks and sleeps till two o'clock, while his cattle also feed and repose. From two till sunset he labours again; then drives his cattle home, feeds them, bathes, eats some supper, smokes, and spends the rest of the evening in amusement with his wife and children or his neighbours. The women fetch water, grind the corn, cook, and do the household work, besides spinning and such occupations.—*Elphinstone's Hist. of India.*

Those who, in confidence of superior capacities or attainments, disregard the common maxims of life, should remember that nothing can atone for the want of prudence; that negligence and irregularity long continued will make knowledge useless, wit ridiculous, and genius contemptible.—*Johnson.*

It is truly a most Christian exercise to extract a sentiment of piety from the works and the appearances of nature. It has the authority of the sacred writers upon its side, and even our Saviour himself gives it the weight and the solemnity of his example. "Behold the lilies of the field; they toil not, neither do they spin, yet your heavenly Father careth for them." He expatiates on a single flower, and draws from it the delightful argument of confidence in God. He gives us to see that taste may be combined with piety, and that the same heart may be occupied with all that is serious in the contemplations of religion, and be at the same time alive to the charms and the loveliness of nature.—*Dr. Chalmers.*



[Remains of Stoke Manor-House.]

RAILWAY RAMBLES.

STOKE

At a short distance from the churchyard the stranger may see some ancient chimneys (of those beautiful forms which give our old architecture a character something different from the square lumps of brick of modern times) rising out of the masses of trees which form a picturesque background to the church. These chimneys belong to what remains of the fine old manor-house of Stoke—a place full of the most interesting associations. The history of the place is thus told by Lysons, in his 'Buckinghamshire:'—

"Amicia de Stoke brought the manor of this place in marriage to Robert Poges, who was chosen one of the knights of the shire in the year 1300; his grand-daughter and heir, Egidia, married Sir John Molins, knight-baronet and treasurer of the chamber to king Edward III. In 1331 he had the royal licence for fortifying and embattling his mansion at Stoke; and in 1346 he procured a charter that Stoke and Ditton, where also he had a seat, should be exempt from the authority of the King's Marshal. From Sir John Molins this manor descended by female heirs to the families of Hungerford and Hastings. Henry Hastings, earl of Huntingdon, rebuilt the manor-house in the reign of Queen Elizabeth. The estate was soon afterwards seized by the crown for a debt. King James the First, about the year 1621, granted the manor in fee to Lord Chief Justice Coke, who appears to have held it many years before as lessee under the crown. In 1601, being then Attorney-General, he entertained Queen Elizabeth very sumptuously at this place, and presented her Majesty with jewels to the value of 1000*l.* or 1200*l.* In 1625, this celebrated lawyer, having quitted his high station, and being out of favour with the court, was obliged, much against his will, to serve the office of sheriff for the county; and it was thought by his friends a great degradation, that he, who had filled one of the highest situations on the bench, should attend on the judges at the assizes. Sir John Villiers, elder brother of the Duke of Buckingham, married Sir Edward Coke's only daughter, and this manor (then held by lease) having been settled on him at the time of his marriage, he was, in 1619, created a peer by the title of Baron Villiers of Stoke-Poges, and Viscount Purbeck. Lord Purbeck succeeded to this estate after the death of Sir Edward Coke, which happened in 1634, at his seat at Stoke-Poges. The house, it appears, was settled on his lady, who was relict of Sir William Hatton.

"In 1647 Stoke House was for a short time the residence of the unfortunate King Charles, when he was a prisoner in the power of the army. Not long after the death of Lord Purbeck, which happened in 1656, the manor of Stoke was sold by his heirs to John Gayer, Esq., elder brother of Sir Robert Gayer, K.B., who afterwards possessed it. It was purchased of the Gayers, about the year 1720, by Edward Halsay, Esq., one of the representatives of the town of Buckingham, whose daughter Anne married Lord Cobham. Stoke House and the manor were sold by her heirs to William Penn, Esq., chief proprietor of Pennsylvania."

When Gray resided at Stoke, the old Manor-house was occupied by Lady Cobham; and the poem of the 'Long Story' was founded upon a visit which two ladies residing at the Manor-house paid the poet at his mother's cottage. The opening of the poem is very spirited; and it gives a fine poetical notion of what the old mansion was:—

"In Britain's isle, no matter where,
An ancient pile of building stands:
The Huntingdons and Hattons there
Employ'd the power of fairy hands

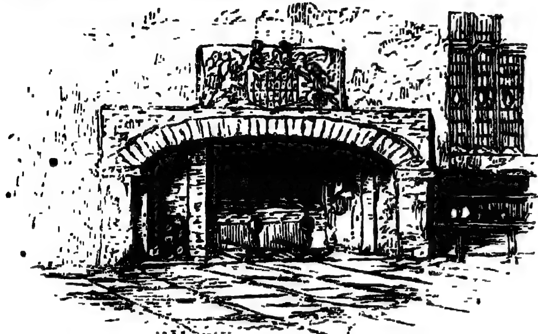
To raise the ceiling's fretted height,
Each panel in achievements clothing,
Rich windows that exclude the light,
And passages that lead to nothing.

Full oft within the spacious walls,
When he had fifty winters o'er him,
My grave Lord-Keeper led the brawls;
The seals and maces danced before him.

His bushy beard, and shoe-strings green,
His high-crown'd hat, and satin doublet,
Mov'd the stout heart of England's Queen,
Though Pope and Spaniard could not trouble it."

With the exception of one wing, the Manor-house was pulled down in 1789; and a modern house, with portico and cupola, was erected at some distance, by Wyatt. We believe that if the old house had endured

to our own time, such a destruction would not have taken place. The new mansion has a more commanding site; and is one of those pretty things which the age of George III. produced—having no characteristic of nation or age—bad copies of exotic originals. But it gives us nothing that can compensate for the sweeping away of the fabric which told the story of one of the most striking periods of our annals, and of more than one of the really great men of a great age. It is gone. We have an old kitchen left, capacious enough for the hospitality of an attorney-general who had a queen for his guest; and the wide fire-place is still remaining with its heraldic sculptures.



In a small room on the second floor there are some rude paintings, also heraldic, on the plastered walls, with the initials E. R.; on another side are some quaint inscriptions, amongst which we deciphered—

'FEARE THE LORDE.
OBEY THE PRINCE.
LOVE THINE ENMIS.
BEWARE OF PRIDE.
SPEKE THE TRUETH.
BEWARE OF MALLIS.'

The scenery immediately surrounding the old Manor-house is exceedingly picturesque.

About half a mile from the church is the house in which Gray resided. It is called Westend Cottage; and is now a very commodious villa, with pleasure-grounds and ornamental water. The house, however, has been much enlarged and modernized. It appears to us that Gray meant to describe it in the following passage of a letter to his friend Palgrave:—

"I do not know how to make you amends, having neither rock, ruin, or precipice near me to send you; they do not grow in the South: but only say the word, if you would have a compact neat box of red brick with sash-windows, or a grotto made of flints and shell-work, or a walnut-tree with three mole-hills under it, stuck with honeysuckles round a basin of gold fishes, and you shall be satisfied; they shall come by the Edinburgh coach."



The walnut-tree still remains; and so does the summer-house or grotto.

THE RAIN-GAUGE, OR PLUVIOMETER.

There are but few of us who would not be glad to know whether and when "it is going to rain," but we are not yet in a condition to lay down rules in the matter. It is not known what is the total quantity of rain which falls, nor how far it differs in different years at the same place; neither is it certain that all the causes which tend to produce rain are known to us. Much, very much, has yet to be done before these points can be determined; and the only mode of determining them is by careful observations on the phenomena of weather, by the aid of well-constructed instruments. One of the most obvious of these instruments, so far as rain is concerned, is the *rain-gauge* or pluviometer, concerning which we shall here offer a few explanatory observations.

The rain-gauge, however it may be formed, is an instrument or vessel for catching the rain as it falls, with a view of determining, at the end of any given period, the quantity of rain which has fallen within that period. This quantity is not measured by the gallon or other analogous measures, nor by weight, but by depth in inches; that is, if a large flat-bottomed vessel were exposed openly to the rain, and the rain-water could be prevented from evaporating, how many inches depth of water would there be in it at the end of a given period? It is evident that this depth would be the same whether the vessel was a yard square or a foot square, provided the shape and position of the two were alike. In practice, however, it is necessary to guard against the effect of evaporation, and also to provide the means of conveniently measuring the quantity of rain which has fallen. These objects have given rise to the various forms of rain-gauge.

Most rain-gauges consist of a funnel whose stem descends into a bottle or other close vessel beneath. In an instrument invented by Mr. Pickering during the last century, the rain was received in a tin funnel only one inch square, and thence descended into a graduated glass tube half an inch in diameter; by observing the height at which the water stood in the tube at the end of any given time, and comparing the diameter of the tube with the dimensions of the funnel, the number of inches of rain fallen was ascertained. In the old rain-gauge at the Royal Society's apartments, the rain was received in a conical funnel twelve inches in diameter, strengthened at the top by a brass ring twelve inches in diameter; the sides of the funnel and the inner lip of the brass ring were inclined to the horizon at an angle of 65°, and the outer lip at an angle of 50°, with a view both of preventing the rain which fell within the funnel from being splashed out, and of preventing the introduction of that which fell on the outer lip.

Dr. Heberden used a tin funnel, the stem of which consisted of a very long tube, which passed into a bottle through a cork, to which it was exactly fitted; the tube went down very near to the bottom of the bottle, and therefore the rain which fell into it would soon rise above the lower end of the tube, so that the water was nowhere open to the air, except for the small space of the area of the tube: scarcely any evaporation could take place from such an instrument. Dr. Gordon employed a rain-gauge consisting of a copper funnel five inches in diameter at the top, and inserted at the bottom into a tube of the same metal. This tube was thirty inches in length, one and a half in diameter, and furnished with a stop-cock at the lower end. It was examined every morning at ten o'clock, and if any rain had fallen during the twenty-four hours, it was

measured by letting it off through the stop-cock into a glass tube half an inch in diameter, with an attached scale of inches and tenths. By this means the rain that fell in a circular area five inches in diameter was collected in an area half an inch in diameter (one-tenth as much); and as the superficial area of the one was a hundred times that of the other, inches and tenths of water in the tube corresponded to hundredths and thousandths of an inch of rain on the surface of the ground.* To prevent waste by evaporation, the communication between the funnel and the copper tube was made very narrow; and the upper edge or rim of the funnel was bent so as to prevent the splashing of the water.

Dr. Trail describes the following form of rain-gauge:—It consists of a cylindrical copper vessel, rather less than four inches in diameter; upon the upper part of which a funnel of the same metal, with an upright brim, exactly one foot in diameter, is fitted. A hollow vessel of metal, or a piece of cork, serves as a float, to support a rod of box-wood graduated in tenths of an inch. The water which falls into the funnel finds its way into the cylinder, and raises the float. The quantity is read off the rod at a stay placed across the funnel; and from the relative proportion of the cylinder and the funnel, each one-tenth of an inch is equivalent to one-hundredth of an inch of water entering the mouth of the funnel.

A rain-gauge recommended by Mr. Howard is the following:—The funnel is fitted on the neck of a glass bottle, by means of an exterior tube which is soldered to the funnel, and prevents the entrance of water into the vessel except through the mouth of the funnel. The quantity of rain is ascertained by a graduated glass measure, the divisions of which correspond to one-hundredths of an inch falling on the mouth of the funnel.

Professor J. Phillips, having in his researches on rain, conducted at York under the auspices of the British Association, been led to notice the importance of determining the direction in which rain falls, as well as the quantity, constructed a very ingenious rain-gauge with this object in view. It consists of a compound gauge, having five equal receiving funnels and tubes: one with a vertical tube and horizontal aperture; the other four with tubes recurved, so as to present the openings of the funnels in four vertical planes, directed to four quarters of the horizon. Each tube has a cock at the lower end for drawing off the water into a graduated tube. Now, it is obvious from such an arrangement, that the funnels will receive different quantities of rain during any one shower. If the rain descend perpendicularly, none will fall into any of the lateral funnels (the rims of which are vertical); if it descend obliquely from east to west, consequent on an east wind, some will fall in the east funnel, but none in the other three lateral funnels; if it come from a direction a little southward of east, a small quantity will fall in the south funnel, and a larger in the east; if the rain veer about in different directions during a shower, it is just possible that all the lateral funnels may receive portions of it. The rain which falls in the funnels being carefully measured after each shower, the observer is able immediately to determine the direction and inclination of the rain.

So long as one rain-gauge is employed at any one station, the results which it affords are of but partial benefit; but when different gauges are placed near each other, but at different heights, some very remarkable phenomena are observed. It is found that more rain falls at the earth's surface than at several feet above the surface. This has been decisively shown by Mr. Phillips's rain-gauge experiments at York; but the fact was observed seventy years ago by Dr. Heberden and Mr. Daines Barrington. A comparison having been made between the quantity of rain which fell in two places in London, about a mile distant from one another, it was found that the rain in one of them constantly exceeded that in the other, not only every month, but almost every time that rain fell. As the gauges were exactly alike, and were observed in a similar manner, attempts were made to ascertain the cause of the difference. One of the gauges was fixed so high as to rise above all the neighbouring chimneys; the other was considerably below them; and there appeared reason to believe that the difference in the quantity of rain in these two places was owing to this difference of height. To test this opinion, three rain-gauges were regularly observed for twelve months, from July, 1766, to July, 1767; one being placed on the square part of the roof of Westminster Abbey, another upon the top of a dwelling-house, and the third not far from the ground. Each rain-gauge was examined once a month, and it was found, at the end of the year, that while twenty-two inches of rain had fallen into the lowest gauge, only eighteen had fallen into the middle one, and twelve in the uppermost.

Mr. Barrington, a year or two afterwards, made some experiments to show that this difference of quantity does not depend on the actual difference of level between the stations, considered with reference to a truly horizontal plane, but on the difference of the height at which the instruments stood from the ground. Two facts were adduced in support of this. Two rain-gauges were placed, the one upon Mount Rennig in Wales, and the other in the plain below, at about half a mile's distance; the perpendicular height of the mountain being about thirteen hundred feet, and the gauges being placed respectively at equal heights above the surface of the ground at the two stations, it was found that the quantity of rain received in the two gauges was very nearly equal. The second fact was, that of the two gauges experimented on at the two houses in London, that one into which the greater quantity of rain had fallen, although placed at a lower part of the house to which it was attached, was in reality fifteen feet above the level of the other, which, in another part of London, was placed above the top of the house, and into which the lesser quantity always fell.

Repeated observations of this kind have been since made, but a good deal of doubt has existed as to the correctness of the registers kept. Recently, however, Mr. Phillips has observed these phenomena at York with very great care. In the year 1832 he placed three rain-gauges at different elevations at York: one on the top of the Minster, at a height of two hundred and forty-two feet from the level of the river; one on the top of the Yorkshire Museum, at a height of seventy-three feet; and the other in a garden, at the height of twenty-nine feet. Each gauge consisted of a cubical box of tin, measuring ten inches each side, open at top, and receiving, at an inch below its edge, a funnel sloping to a small hole in the centre. The water which entered the funnel was poured into a cylindrical glass vessel graduated to cubic inches and fifths of cubic inches. Hence one inch depth of rain in the gauge was measured by one hundred inches of the graduated vessel; and one-thousandth of an inch of rain was easily read off. With these instruments Mr. Phillips found that one year's rain in the three gauges was about sixteen, twenty, and twenty-four inches respectively, the lowest gauge receiving the largest quantity. The next year gave (in round numbers) fifteen, twenty, and twenty-six inches; and subsequent years have given proportions more or less analogous to these.

The circumstance is therefore no longer doubted that rain *does* fall more plentifully at the level of the ground than at a greater elevation, and many theories have been started to explain it. Mr. Phillips thinks the

whole difference in the quantity of rain, at different heights above the surface of the neighbouring ground, is caused by the continual augmentation of each drop of rain from the commencement to the end of its descent, as it traverses successively the humid strata of air at a temperature so much lower than that of the surrounding medium, as to cause the deposition of its moisture on its surface. The arguments which have been adduced in confirmation of or in opposition to this opinion we shall not here detail, as the subject is yet in its infancy.

In some 'Instructions for making and registering Meteorological Observations,' circulated by the South African Literary and Philosophical Institution, established at the Cape of Good Hope, are the following remarks relating to the rain-gauge:—"The rain-gauge is an instrument of such extremely easy construction, that any person who lives near a tinman can procure one. In arid climates, it must, however, be remembered that it will often need examination and cleansing, owing to long intervals of disuse, in which insects and dust may lodge. It will often happen too that the slight rain of one day, if left unregistered, may be entirely lost by evaporation in the next; nay, that slight and transient showers may never enter it, being evaporated from it as they fall. The effect of copious dew, too, must be separated from that of rain, so that the mere registry of the contents of the gauge is not of itself a sufficient indication whether rain has fallen in the night or not. However, there are usually good reasons for decision on this point from other indications. Attention to the amount of dew is very necessary, not only because the meteorological questions involved are of a high degree of interest generally, but because in arid climates the dews are of almost as much importance to the maintenance of vegetation as the rain. In stating the quantity of rain daily received in the gauge, the height of the receiver above the soil should be mentioned, experience having shown that the quantities of rain which actually fall in a given area on the ground, and at a very moderate height above it, often differ materially. In some localities and circumstances, the rain-drops receive accession from the air as they descend, in others they undergo partial evaporation. The former is generally the case in cool moist climates."

INUNDATIONS IN HOLLAND IN 1825.

[Concluded from page 438.]

It would have been happy for the Dutch if this had been the whole or even the greater part of the damage done to their country at the beginning of February, 1825, but this was only a small portion of the calamity. The same high tide, the same violent tempest of wind and rain, and the same irresistible pressure of the water against the dykes, extended round the whole interior of the basin of the Zuider Zee. In many places its sea-bulwarks were driven down; in others the waters rose above them and poured over them with a full flood into the devoted country below for five or six hours without obstacle or interruption. The consequence was that a large portion of the extensive provinces of Overyssel, Friesland, and Groningen was deluged in a single night, and filled as brimful to the level of the sea as if no barrier had existed to check its fury.

In East Friesland and Overyssel especially, the inundation was terrific, and the damage immense. Out of the thirty-two lordships of which the former consists, only five escaped the flood. The rest were all partly or entirely overflowed, and more than one hundred thousand acres of their most fertile land converted into a salt-water lake. The flood in this quarter rose four feet above the dykes, and poured in upon the country below in a continuous stream. It was impossible to resist, and difficult by the most rapid flight to escape its fury. Men, cattle, and every living thing fell a sacrifice to its rage. In many of the villages and farm-steadings not a house was left standing, nor was a head of cattle saved. The number of men who perished in the water or were crushed to death by their falling houses, amounted to about one hundred. In one lordship only the number of black cattle drowned amounted to more than a thousand. In some places the villages and churches were raised a little above the level of the fields and meadows. Thither the peasants, therefore, ran for safety. In the church of the village of Wolvega, for instance, four hundred of these wretched beings took refuge from the surrounding flood, without being able to carry with them a single article of food or rag of clothing, and remained benumbed with cold or perishing with hunger till the arrival of means of relief.

In other cases, four or five hundred of them were found crowded together in the market-places, among falling houses, exposed to the inclemency of a wintry sky, and every sort of physical destruction. In one case, where a multitude had retreated to the shelter of a church, its roof was set on fire by lightning. The miserable victims of the inundation thus saw their lives contested by the two fiercest elements of nature, and were threatened to be burned in the midst of the deluge. These sacred edifices, though often raised on higher ground, and made of more durable materials, than the cottage of the peasant, or the houses of the village, were sometimes, like them, unable to withstand the weight of the flood, and, falling down, again exposed the wretched refugees to the inclemency of the storm. Sometimes, when the houses left standing were sufficient to receive the shivering outcasts of those which had fallen, the churches were converted into cow-houses or stables for the remnant of the rescued cattle: for such deep and overpowering calamities confound all conventional distinctions of places and things, and substitute an irresistible and unreasoning necessity for sentiment and feeling. The devouring element, which had swallowed up the dwellings of the living, and even disinterred the coffins of the dead, left neither time, power, nor inclination to attend to the sacredness of an open asylum. The churches, where found standing, were converted indiscriminately into hospitals, stables, or storehouses. To what other purpose could they now be destined? The dreadful catastrophe happened near the close of the week. In a few hours the Sunday approached, and the village bell would have called the people to the house of prayer; but it had previously sounded the tocsin of alarm, and hastened them to other scenes. Instead of indulging in peaceful worship, they were now called to fly from their homes, or to struggle for their lives—to hear the bellowing of their drowning cattle, or the crash of their falling houses—to escape in crowded boats over their flooded farms, or to attempt a safe standing on the labouring dykes, against which they saw their household furniture, their agricultural implements, their winter stores, their all, dashed like the foam of a surf. In such a scene of suffering, in such an immeasurable desolation, "waste and wild," the strong walls of the churches, instead of being profaned, were doubly consecrated by offering a place of refuge. Many of the houseless outcasts of the inundation continued to occupy this kind of retreat till the middle of March, supplied with clothes and food by the charity of their less suffering neighbours.

As the district called *Heststellengwerf* suffered more than most of the other districts of this province, we may just state the amount of the damage. It lost 836

horned cattle above two years old, and 549 below that age, or in all 1385; 18 horses, 265 sheep, and 54 goats; 15,177 roods of peats, and more than a million of pieces of timber. Besides this, 166 farm-steadings and hamlets were injured, damaged, or entirely swept away. In two small hamlets 400 cattle were lost. In two other districts upwards of a thousand of the previously wealthy inhabitants remained towards the middle of March, deprived of all their property, destitute of everything, and dependent for their daily support on the charity of others. The breaches made in the dykes, the carrying off of farm produce, the loss in provisions, fuel, and furniture, the destruction of trees —whose roots the salt water had withered—and the ruin of more than twenty square miles of excellent land, for a year or two to come, presented an overwhelming mass of damage in this province, of which it would be difficult to calculate the amount.

But the devastation of Friesland was small compared with that of Overyssel, though the extent of the inundation was greater. In the latter province, according to official reports, more than two hundred and fifty men were known to be drowned, and others had disappeared who were supposed to be lost; ninety thousand acres of the best land were deluged; fifteen hundred houses were entirely swept away, and double the number greatly damaged; fourteen thousand large cattle destroyed, besides sheep and smaller animals; and four thousand families, previously in wealthy or comfortable circumstances, entirely ruined, and left to depend on public charity or national compensation. The loss in manufactories, magazines, tanneries, salt-works, windmills, stores, trees, dykes, and other establishments, was almost incalculable.

In the higher province of Gelderland the inundation was likewise frightful and destructive, though not so extensive nor ruinous as in the two bordering states. It drowned about thirty persons, and carried off more than one thousand cattle. It advanced so far as to threaten even the dykes of the province of Utrecht. Groningen, East Friesland, and Emden likewise suffered severely; all the country at the mouth of the Ems and for several miles into the interior, being laid under water both from the sea and the river.

The province of Zealand, which includes Walcheren and the other islands at the mouths of the Scheldt and the Meuse, sustained great damage in the breaches made in its dykes and bulwarks, and in the destruction of inanimate property, though only one life was lost, and no extensive ruin occasioned. The streets of Middleburg and Flushing were laid under water, and considerable injury was done to the houses. The activity of the burgomaster and the zealous co-operation of the inhabitants of the latter place, prevented more extensive calamities, by filling up the breaches as soon as they were made. The whole island was in most imminent danger. The islands of Schowen, Tholen, and South Beveland had likewise to lament the violence of the storm, and the pressure of the waters upon their bulwarks. But the most extensive inundation which took place on the western side of the United Provinces was that which proceeded from the overflowing of the Bieschbosch near Dort, itself an inland sea, proceeding from a similar convulsion, which is said, in 1425, to have occasioned the destruction of seventy-two villages, and the death of one hundred thousand inhabitants. The deluge of February, 1825, covered about six thousand acres of fertile land, and threatened with destruction the city and island of Dort. The water rose ten feet in the streets of the suburbs. Considerable damage was done both here and on the Meuse at Rotterdam.

All along the coast of the German Ocean from Ostend, the ramparts of which were partially damaged and seriously endangered, to the Helder, in North Holland, and the islands which act like breakwaters at the entrance of the Zuider Zee, the tempest extended, and the sandbanks and dykes were injured. At the Helder, the immense blocks of granite brought from Norway to compose a durable sea-wall were unable to withstand the violence of the waters, and were scattered about like pebbles. Most of the cluster of islands which we have mentioned (we mean the Texel, Flieland, Terspelling, and Ameland) were inundated and greatly damaged.

Since the year 1170 there have been nine great inundations of different provinces of the Netherlands, more or less destructive, namely, those of 1170, 1404, 1421, 1470, 1531, 1532, 1570, 1592, and 1633; but none of them, with the exception perhaps of that which created the great lake near Dort, in 1421, committed such dreadful havoc on the defences of the country and the property of the people as that of February, 1825. Only a wealthy and industrious people could repair the public injury, or enable the sufferers to support their individual losses

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Chinese Idea of Death.—A Chinese, convicted of a cruel murder, had been sentenced to transportation for life. His friends, who sought to procure a mitigation of his punishment, solicited my supposed influence as an Englishman with the Governor on their behalf. I urged the aggravated nature of the offence as a reason why I could not even conscientiously ask such a thing, if I were sure of success; and suggested that it ought to be a matter of thankfulness he was not hanged. He immediately replied, that he considered this a much severer punishment than death; for in that case his parents, who were living, might have performed his funeral rites and the usual offices at the tomb, of which he was now deprived, while they would also be totally cut off from all intercourse with their son after death as well as in life.—*China, by Professor Kidd.*

Language of England.—At this extraordinary period, when England was a foreign kingdom, the English people found some solitary friends—and these were the rustic monk and the itinerant minstrel, for they were Saxons, but subjects too mean and remote for the gripe of the Norman, occupied in rooting out their lords to plant his own for ever in the Saxon soil. The monks, who lived rusticated in their scattered monasteries, sojourners in the midst of their conquered land, often felt their Saxon blood tingle in their veins. Not only did the filial love of their country deepen their sympathies, but a more personal indignation rankled in their secret bosoms, at the foreign intruders, French or Italian, —the tyrannical bishop and the voluptuous abbot. There were indeed monks, and some have been our chroniclers, base-born, humiliated, and living in fear, who in their leiger-books, when they alluded to their new masters, called them "the conquerors," noticed the year when some "conquerors" came in, and recorded what the "conquerors" had enacted. All these "conquerors" designated the foreigners, who were the heads of their houses. But there were other truer Saxons. Inspired equally by their public and their private feeling, these were the first who, throwing aside both Latin and French, addressed the people in the only language intelligible to them. The patriotic monks decided that the people should be reminded that they were Saxons, and they continued their history in their own language. . . The true language of the people lingered on their lips, and it seemed to bestow a shadowy independence to a population in bondage. The remoter the locality, the more obdurate was the Saxon; and these indwellers were latterly distinguished as "Uplandish" by the inhabitants of cities. For about two centuries "the Uplandish" held no social connection; separated not only by distance, but by their isolated dialects and peculiar customs, these natives of the soil shrank into themselves, intermarrying and dying on the same spot; they were hardly aware that they were without a country. —*D'Israeli's Amenities of Literature.*



CHAUCER'S PORTRAIT GALLERY.

THE HABERDASHER, ETC

In this group of portraits Chaucer has not attempted to give us any individuality; no doubt. none knew better than himself that in describing one of these "warm comfortable men," he described all; whilst by "massing them," he brought out still more strongly the chief and common feature—their wealth.

> "An haberdasher and a carpenter,
> A webbe*, a dyer, and a tapiser†,
> Were all yclothed in one livery
> Of a solemn and great fraternity.
> Full fresh and new their gear ypiked‡ was.
> Their knives were ychaped§ not with brass,
> But all with silver wrought full clean and well:
> Their girdles and their pouches every del||.
> Well seemed each of them a fair burgéss
> To sitten in a guildhalle on the dais;
> Everich for the wisdom that he can
> Was shapelich for to be an alderman.
> For cattle hadden they enough and rent;
> And eke their wivés would it well assent:
> And elles certainly they were to blame.
> It is full fair to be yeleped Madame,
> And for to go to vigils¶ all before,
> And have a mantle royally ybore."

The best illustrations of this passage of the prologue will perhaps be a few notices of the trades and companies to which these civic pilgrims belonged, and of the aldermanic rank to which they, and more particularly their wives, aspired.

* Weaver. † Maker of tapestry. ‡ Picked; spruce. § Furnished; mounted. || *Every del*, every part, or every bit. ¶ The eves of festivals.

The haberdashers were perhaps the principal of the trade associations with which we have here to do. They were originally a branch of the mercers, and dealt, like them, in small wares. Lydgate, in his well-known ballad of 'Lykpenny's Adventures in London,' places their stalls in the 'Mercery,' at Cheap. About the time of Chaucer they divided into two fraternities, dedicated respectively to St. Catherine and St. Nicholas; one branch consisting of the hatters or hurrers, and the other of the dealers in miscellaneous articles, who were also called milliners, from their importing Milan goods for sale, such as broaches, aiglets, spurs, glasses, &c. Pins formed an important article of the haberdashery trade at this period, having not long superseded the points or skewers made of thorns, by which ladies were previously obliged to fasten their garments. With respect to the carpenters of the fourteenth century, we have only to mention that the tools of an individual engaged in that trade in Colchester consisted merely of a broad axe, value five pence, another three pence; an adze, two pence; a square, one penny, a navegor (probably a spokeshave), one penny: making the total value of his implements one shilling A carpenter of the present day would be puzzled to perform all the variety of operations required of him with such tools only: *his* chest is a somewhat expensive affair. The weavers' guild was one of the oldest associations of the kind of which we have any account;

and we possess a record in connection with them which is interesting in several points of view. We allude to the particulars of a case brought before the Justices Itinerant sitting at the Tower of London, in the reign of Edward II. On this occasion "the weavers were required to show by what authority they at this time claimed to have their guild in the city, and by virtue of the same guild to have yearly the right of electing from amongst themselves bailiffs and ministers; and the same so elected to take and swear in faithfully to execute their offices before the mayor of London? By what right also they claimed to hold their courts from week to week of all that pertained to their guild, and that none should intermeddle with their ministers in London, Southwark, or the parts adjacent, unless by their own permission, or that it were done by one of the guild; and that persons of the same guild should not be impleaded by others of matters concerning the mystery, except in the courts of the guild, or be elsewhere accused and answered? Why none might have working implements in their possession unless the same were testified to be good and honest, and that all of the mystery should be forced to contribute to the king's ferme? Why no stranger was to be admitted as a manufacturer amongst them without producing letters testimonial of good conduct, and the reasons of his coming? Why the working implements of such of the mystery as were in arrears of their fermes might be distrained by the bailiffs of the guild? . . . . It was further demanded, why, if any one manufactured *cloth of Candlewick Street*, he ought to be overlooked by the bailiffs of the guild, whether or not his work was bad, and to the damage of the people; and if so, that it should be proved before the mayor of London, and the offender fined in half a mark; and moreover that such workmen should be brought before the bailiffs of the guild, according to the Constitutions; and whatever cloth or piece of cloth should be found to be of Spanish mixed with English wool, contrary to proper usage, might be adjudged to be burnt? . . . . Why those of the guild might sell without control in London all things belonging to the mystery? And, lastly, why none were allowed to work between Christmas and the Purification, or at night by candlelight, at other times proscribed?"* The weavers pleaded in answer a charter of Edward I., in which were recited charters of Henry II. and Henry I.; but the jury decided in a great measure against them with regard to the privileges claimed, and declared that the business was managed by the weavers "to their own profit and the common hurt of the people." Of the Dyers' Company, we need only remark that it possessed the peculiar privilege of keeping swans on the Thames. Some idea of the respective footing of these Companies in Chaucer's time is afforded by a paper in the City Records, showing the number of persons sent by each to the Common Council. The Haberdashers and Hurrers, the Weavers, and the Tapisers, or Tapestry-makers, sent four from each Company; the Joiners, or, we presume, Carpenters, two; whilst the Dyers' Company was not at all mentioned.

It appears from the text that aldermen's wives were honoured with the title of Madame, and that they took precedence in attending vigils, and of course on other public occasions. The qualifications required from persons elected as aldermen were, a certain number of cattle and a certain amount of rent. According to Stow, it was necessary also that the person proposed for alderman should be without deformity in body, wise and discreet in mind, wealthy, honourable, faithful, free, and of no base or servile condition; that no disgrace which might happen to him on account of his birth, might thence redound on the rest of the aldermen or the whole city. And hence it came to pass that none was made apprentice, or at least admitted into the liberty of the city, unless he was known to be of a gentleman-like condition; or if, after he had been made free, it came "to be shown that he was of servile condition, for that very thing he lost the freedom of the city."*

About the period Chaucer is supposed to have been writing the 'Canterbury Tales' (1386), it was ordered that in the taking of apprentices, and also in the admitting to freedom, that ancient custom should be observed thenceforward. There seems indeed every reason to suppose that the title and person of an alderman were as yet looked upon with high respect, and that its old baronial dignity was far from being forgotten.

About 1350, Stow says the ancient and honourable custom with regard to the burial of aldermen was still observed; and he gives a case in point:—"In the church where an alderman was to be buried, one armed with his arms, bearing in his hand a standard on an horse with trappings, carried aloft his shield, helmet, and his other arms with the standard, as the manner yet is of burying the lord barons."

* Herbert's 'History of the Twelve Great Livery Companies,' vol. i., p. 18.

* 'Survey of London,' b. 5.

PAINTING IN FRESCO.

THERE is a kind of painting which is very little known in England, but which, in foreign countries, has been made the vehicle of some of the noblest of pictures,—we mean *fresco*. This word does not very well express the nature of the process, since it is merely an Italian term equivalent to our word for *fresh*; but it seems to have been applied on account of the colours, in this mode of painting, being laid on damp *fresh* plaster.

Painting in oil was not, as far as we at present know, executed until about the thirteenth century; and therefore all the pictures painted before that time were in fresco, distemper, enamel, encaustic, &c. Many ancient paintings, in Egypt, in Herculaneum, in Pompeii, and other places, executed many centuries ago, and only brought to light in modern times, are in fresco, and exhibit colours of extraordinary brightness. During the dark period which intervened between the time of the Romans and the revival of the fine arts in Italy in the fourteenth century, fresco-painting shared the lot to which all the other branches of art were doomed, and was forgotten; but Raffaelle, Michael Angelo, and other great painters, not only revived the art, but brought it to a pitch of perfection which excelled anything previously, or indeed subsequently, achieved. It was a kind of painting so congenial to the vast mind of Michael Angelo, that he deemed it the only one worthy of a great artist, painting in oil being "only fit for women and children."

This opinion as to the pre-eminence of fresco over oil-painting arose in great measure from the difficulties which surround the former, and which can only be surmounted by a man of great talent. It is the peculiar and distinguishing feature of this kind of painting, that the colours must be laid in while the plaster is wet, or at least damp, in order that they may dry with the plaster, and in so doing combine firmly with it; and as the plaster dries in the course of a few hours, the production of a large picture becomes a sort of patchwork, each day's painting being distinct and detached from the rest, and executed in a portion of plaster which has been laid on the same day. The difficulties which thence result have been thus alluded to by a writer on the subject:—"There is no beginning in this by drawing in the whole of the parts at one time and correcting them at leisure, as is the custom of oil-

painters, who may therefore proceed to work without a sketch. Here, all that is begun in the morning must be completed by the evening, and that almost without cessation of labour, while the plaster is wet; and not only completed in form, but a difficult task, nay, almost impossible without a well prepared sketch, must be performed, viz. the part done in this short time must have so perfect an accordance with what follows or has preceded of the work, that when the whole is finished it may appear as if it had been executed at once or in the usual mode, with sufficient time to harmonise the various forms and tones of colour. Instead of proceeding by slow degrees to illuminate the objects and increase the vividness of the colours, in a manner somewhat similar to the progress of nature in the rising day, till at last it shines with all its intended effect, which is the course of painting in oil; the artist working in fresco must at once rush into broad daylight, at once give all the force in light and shade and colour which the nature of his subject requires; and this without the assistance, at least in the commencement, of contrast to regulate his eye."

Fresco-paintings are usually executed on the walls of buildings, such as churches, galleries, corridors, saloons, &c.; and the routine of proceeding is somewhat as follows:—The artist first prepares a sketch, embodying the subject which he wishes to represent. He next draws the outline of the design on a *cartoon*, or piece of paper, exactly the size of the intended fresco. The word cartoon, which has almost a magic effect in connection with the fine arts, is literally nothing more than a modification of *cartone*, the Italian name for a large sheet of paper. (The cartoons of Raffaelle, described in our Supplement for September, are similarly sheets of paper, the designs on which were to serve as originals from which tapestries were to be copied.)

While the sketch and the cartoon are in course of preparation, the wall on which the labours of the painter are to be directed is also being prepared. One indispensable requisite is, that the wall should be free from damp, for fresco-paintings, from the nature both of the colours and of the plaster in which they are laid, are very susceptible of injury from damp; indeed, one reason assigned for the non-prosecution of this art in England is the dampness of the climate. When the fitness of the foundation is ascertained, a preparatory layer of plaster is laid on, which varies according to the material of which the wall is composed. Brick is deemed the best foundation, because, from the smallness of the size of the bricks, the interstices between them are numerous, which greatly assists in retaining the plaster in adherence. If the wall consist of smooth stones, it is customary to chisel holes or grooves in it, or adopt other means whereby the plaster may be made to cling to the foundation on which it is laid. Precautions of this kind are very necessary to prevent the cracking of the composition. This preparatory plaster consists sometimes of well-washed chalk made into a cement with pounded brick or river-sand; some painters have used pounded sea-sand and chalk or lime; while others have employed somewhat analogous materials, varied in minor details.

When the preparatory layer of plaster is dry, the second or finishing layer is applied, the surface of the first layer being slightly wetted to aid the adhesion of the two. The materials are nearly the same as for the first layer, but more carefully prepared; and the art of laying it on is one of great nicety, for it must be free from lumps, spread evenly and smoothly, and laid on in no greater quantity, or over no greater an extent of surface, than the artist can colour before the plaster dries, which it does in from five to eight hours, according to the season. The plaster is laid on with a trowel, and is afterwards smoothed over with the same instrument, a piece of paper being laid between the trowel and the paper.

When the plaster is sufficiently firm to bear the pressure of the finger, but still damp enough to allow the colours to incorporate with it, the painter commences his labours. He places his cartoon against the wall, and traces the outlines of the figures or other objects on the design, either by pricking with a pin through the paper at numerous points, or by passing a hard point over the lines of the cartoon. By either of these means a faint impression is made in the plaster, sufficient to guide him in the application of his colours.

The colours employed in fresco-painting are wholly of mineral origin, no animal or vegetable colours being admitted. Chalk and marble-powder for white; vermilion, burnt and unburnt ochres, burnt and raw sienna, Spanish red, &c., for red and brown; ultramarine and smalt for blue,—are among the colours employed; while greens, yellows, blacks, &c. are produced from analogous earthy or crystalline bodies. The colours are ground very fine, and mixed with water, and arranged on a pallet or in small vessels, as for other kinds of painting. Prepared water-colours used on paper or ivory, and oil-colours used on prepared canvas, present nearly the same tint when dry as when wet; but in fresco and in distemper painting this is not the case, since all the colours become much lighter when dry than when wet. To be certain, therefore, of the resultant hue, the painter usually has a piece of some absorbent earthy substance, such as tile or brick, at hand, on which he can try the tint yielded by any combination of his colours.

The artist proceeds to work out his design with the colours just alluded to, and on the foundation of damp plaster; but here the genius of the painter is called into action, and technical description fails of conveying an adequate idea of his labours. The excellence and defects of fresco-painting have been thus stated by a writer familiar with the subject: As the artist is obliged, from the nature of this kind of painting, to proceed with rapidity in its execution, it has necessarily more spirit and vigour than paintings in oil, which may be repeated and re-touched as often as the artist fancies he can improve or heighten their effect; there is not time to meddle with and disturb the freshness of the colour, or the fullness and freedom of the touch. But, on the other hand, there can be no minute detail of forms, or extensive variety in the gradation of tints; the beauties of neatness and delicacy of finish make no part of the excellencies of this branch of art; it will not bear the close examination which well-finished pictures in oil do; and there is something dry and rough in its appearance, when inspected from too short a distance. Though the colours have more freshness of hue than those used in oil-painting, yet, as their number is comparatively smaller, their united power of imitating nature is not so complete.

To enumerate all the eminent specimens of fresco, ancient and modern, would require a volume. We can therefore only mention, that after a temporary cessation of the art for some time, it has been lately revived with extraordinary effect in Bavaria, where the enlightened king is enriching his capital, Munich, with almost innumerable specimens of this branch of art. In our Nos. 270 and 271 will be found descriptions of two new galleries at Munich, one for pictures and the other for sculptures; and both of these galleries, as well as two new palaces belonging to the king, a chapel-royal, an arcade, and other buildings, have been decorated with magnificent series of frescoes, mostly embodying some historical or allegorical subjects. Of these frescoes we have given specimens in Nos. 292, 294, 295, and 297, together with an account of

the historical poem from which they are taken. Whether we shall ever see a school of fresco-painting in England, depends principally, we imagine, on the kind of patronage bestowed upon the art. Unless the walls of large buildings are decorated with frescoes, this branch of art is not likely to flourish. We may hope for the best, as in a recently published Report of the Parliamentary Committee on the Fine Arts in connection with the New Houses of Parliament, the opinions of many of our principal artists, especially Mr. Eastlake, are given on the expediency of decorating the interior of those buildings with frescoes. Although the difficulties are not lost sight off, yet the general impression seems to be in favour of such a plan.



[St. John's Gate, Clerkenwell, 1841.]

ST. JOHN'S GATE.

A RECENT number of the periodical work entitled 'London' contains an article on St. John's Gate; the greater part of which is devoted to an account of the priory of St. John of Jerusalem, at Clerkenwell, in connection with the history of the Knights of St. John, subsequently the Knights of Rhodes and the Knights of Malta; which history has been fully given in the 'Penny Magazine.' There has been some talk of reviving the institution, with a Prince of the Blood as "the Prior" in England. It will be perceived that such *playing at chivalry* is not original; and that the very ground which these knights of old occupied is already the scene of a very respectable travestie of the heroic ages.

When Samuel Johnson first saw St. John's Gate, he "beheld it with reverence," as he subsequently told his amusing biographer Boswell. But Boswell gives his own interpretation of the cause of this reverence. St. John's Gate, he says, was the place where the 'Gentleman's Magazine' was originally printed: and he adds, "I suppose, indeed, that every young author has had the same kind of feeling for the magazine or periodical publication which has first entertained him." He continues, with happy naïveté, "I myself recollect such impressions from the 'Scot's Magazine.'" Mr. Croker, in his valuable notes to Boswell's 'Johnson,' has a very rational doubt of the correctness of this explanation: "If, as Mr. Boswell supposes, Johnson looked at St. John's Gate as the printing-office of Cave, surely a less emphatical term than *reverence* would have been more just. The 'Gentleman's Magazine' had been, at this time, but six years before the public, and its contents were, until Johnson himself contributed to improve it, entitled to anything rather than *reverence;* but it is more probable that Johnson's *reverence* was excited by the recollections connected with the ancient gate itself, the last relic of the once extensive and magnificent priory of the heroic knights of the order of St. John of Jerusalem, suppressed at the dissolution, and destroyed by successive dilapidations."

A century is passed away since Johnson, from whatever motive, beheld with reverence the old gate of the hospital of St. John of Jerusalem. There it still remains, in a quarter of the town little visited, with scarcely another relic of antiquity immediately about it. Extensive improvements are going forward in its neighbourhood; and it may probably be one day swept away with as ruthless a hand as that of the Protector Somerset, who blew up the stately buildings of the hospital to procure materials for his own palace in the Strand. May it be preserved from the most complete of all destroyers—the building speculator! It has to us a double interest. It is the representative of the days of chivalrous enthusiasm on the one hand, and of popular improvement on the other. The Order, which dates from the days of Godfrey of Bouillon, has perished, even in our own time—an anomaly in the age up to which it had survived. The general desire for knowledge, which gave birth to the 'Gentleman's Magazine,' is an increasing power, and one which depends upon no splendid endowments and no stately mansions for its maintenance and ornament. Cave, the printer, was the accidental successor of the Prior of the Hospital of St. John. But, representing the freedom of public opinion, he was the natural successor of the despotic power of a secret society. At any rate, the accident invests St. John's Gate with an interest which would

not otherwise belong to it; and in its double character we may not be ashamed to behold it "with reverence." Before we carry ourselves and our readers into the past, we must, however, request their companionship while we examine what St. John's Gate now is. At the head of this paper they have a representation of its present external appearance: but a peep into the interior may furnish some amusing contrasts with the days of the Edwards and Henries.

Turning out of St. John's Street to enter St. John's Lane—a narrow street which runs obliquely from that wide thoroughfare—the Gate presents itself to our view, completely closing the road, and leaving a passage into St. John's Square only through the archway. The large masses of stone of which the Gate is composed are much decayed; but the groined arch has recently been restored. This restoration, which appears to have proceeded from a desire to preserve this monument as public property, seems out of character with the purposes to which the Gateway is devoted. A huge board which surmounts the archway informs us that we may here solace ourselves with the hospitalities of the Jerusalem Tavern; and, that we may understand that the entertainment which may be set before us will not be subjected to any of the original notions of abstinence which a pilgrim might once have been expected to bring within these walls, a window of a house or bulk, on the eastern side of the Gateway, displays all the attractions of bottles with golden labels of "Cordial Gin," "Pineapple Rum," and "Real Cognac." We pass under the arch, and perceive that the modern *hospitium* runs through the eastern side of the Gateway, and connects with premises at either end. We are here invited "To the Parlour;" and we enter. A comfortable room is that parlour, with its tables checkered with many a liquor-stain; and genius has here its due honours, for Dr. Johnson's favourite seat is carefully pointed out. But the tavern has higher attractions than its parlour-fireside with Dr. Johnson's corner; it has a "Grand Hall," where the "Knights of Jerusalem" still assemble in solemn conclave every Monday evening. It was long before we ventured to ask whether any uninitiated eyes might see that Grand Hall; but we did take courage, and most obligingly were we conducted to it. We ascended the eastern turret by a broad staircase (but certainly not one of the date of the original building), and we were soon in the central room of the Gateway. It is a fine lofty room, and, if there be few remains of ancient magnificence—no elaborate carvings, no quaint inscriptions, no "storied windows,"—the spirit of the past has been evoked from the ruins of the great military order, to confer dignities and splendours on the peaceful burghers who are now wont here to congregate. Banners, gaudy with gold and vermilion, float upon the walls; and, if the actual "armoury of the invincible knights" be wanting, there are two or three cuirasses which look as grim and awful as any

"Bruised arms hung up for monuments."

Nor are the fine arts absent from the decoration of this apartment. Sculpture has here given us a coloured effigy of some redoubted Hospitaller; and Painting has lovingly united under the same ceiling the stern countenance of Prior Dockwra, the builder of the Gate, and the sleek and benign likenesses of the worshipful founders of the modern Order. Their names may one day have a European fame, like those of Fulk de Villaret and Pierre d'Aubusson; but in the meanwhile history records not their exploits, and we shall be silent as to their names. They are quiet lawgivers, and not rampaging warriors. They have done the wise thing which poetry abhors—changed "swords for ledgers." Instead of secret oaths and terrible mysteries, they invite all men to enter their community at the small price of twopence each night. Instead of vain covenants to drink nothing but water, and rejoice in a crust of mouldy bread, the visitor may call for anything for which he has the means of payment, even to the delicacies of kidneys, tripe, and Welsh rabbits. The edicts of this happy brotherhood are inscribed in letters of gold for all men to read; and the virtuous regard which they display for the morals of their community presents a striking contrast to the reputed excesses of the military Orders. The code has only four articles, and one of them is especially directed against the singing of improper songs. Here then is mirth without licentiousness, ambition without violence, power without oppression. When the Grand-Master ascends the throne which is here erected as the best eminence to which a Knight of Jerusalem may now aspire, wearing his robes of state, and surrounded by his great commanders, also in their "weeds of peace," no clangour of trumpets rends the air; but the mahogany tables are drummed upon by a hundred ungauntleted hands, and a gentle cloud of incense arises from the pipes which send forth their perfume from every mouth. Would we had partaken of that inspiration! After the third hour the dimensions of the "Grand Hall" of the Jerusalem Tavern would have expanded into the form and proportions of the "Great Hall" of the Priory of St. John. The smoke-coloured ceiling would have lifted itself up into a groined roof, glorious with the heraldry of many a Crusader or Knight of Rhodes. The drowsy echoes of "tol de rol" or "derry down" would have melted into solemn strains of impassioned devotion: and the story three times told, how Jenkins beat his wife and was taken to the police-station, would have slided into a soft tale of a Troubadour discovering his lady-love who had followed him through Palestine as a pretty page. Slowly, but surely, the green coats and the blue, the butcher's frock and the grocer's apron, would have become shadowed into as many black robes; and in the very height of our ecstacy the white cross would have grown on every man's breast out of its symbolical red field. Then the "order, order" of the chairman would have become a battle-cry; the knock of his hammer would have been the sound of the distant culverin; the hiccups of the far-gone sipper of treble-X ale would have represented the groans of the wounded. We should have fallen asleep, and have dreamt a much more vivid picture of the ancient glories of the Priory of St. John of Jerusalem than we can hope to present with the aid of obscure chronicles and perishing fragments — the things which the antiquary digs up, and, when he has brought them to light in his erudite pages, has the satisfaction to be called "one of those industrious who are only re-burying the dead."

THE USE OF WATER TO VEGETATION.

The ancient Eastern philosophers, who regarded water as one of the four elements of which the world was composed, were loud in their praises regarding the wonderful effects they witnessed water produce upon the rich soils of Eastern climes. During many succeeding ages it was a common opinion that water alone was able to support vegetation; among a host of eminent names, we may select Van Helmont, Duhamel, and Boyle. These men deceived themselves, however, by not paying sufficient attention to the purity of the water in their various experiments, or not guarding against error with a sufficient degree of accuracy. Van Helmont's noted experiment upon a willow-tree was considered as convincing evidence. He filled an earthen vessel with two hundred pounds

of soil, which had been thoroughly dried in an oven, which he afterwards moistened with rain-water. In this vessel he planted a willow weighing five pounds, and placed a covering over the vessel so as to exclude dust and all other extraneous matter. Here the willow continued to grow for five years, moistened occasionally with rain or distilled water, when it was taken out and found to weigh rather more than one hundred and sixty-nine pounds, although the earth in which it had been planted, after being thoroughly dried, was found to have lost only a couple of ounces in weight. It was argued from this that an increase of one hundred and sixty-four pounds had taken place, although the only food of the willow had been water, and consequently that water only was a sufficient support to vegetation.

It was, however, afterwards ascertained that the rain water employed was so far from being chemically pure, that it contained sufficient earthy matters to supply the increased weight of the willow-tree; and it was shown that common earthen vessels will imbibe and transmit moisture abounding with such solid matters as are usually found in ordinary vegetable productions.

Still more recent discoveries have satisfactorily proved, that something more than water, when chemically pure, is necessary for the general purposes of vegetation; for wherever experiments have been tried with perfectly pure water—that is, water divested of all extraneous matters and substances—the result has been the same, the plants only vegetating for a certain time, never arriving at maturity, nor ever perfecting their seed. The florist, without possessing any knowledge of chemical science, is well aware that such bulbous roots as hyacinths, tulips, &c., which are frequently met with in glass vessels containing water, refuse to blossom unless they are planted in the earth every other year. Every attempt to make plants flourish in what are denominated the pure earths has failed where they have been watered with pure water; while an opposite result has been produced where water containing its usual impurities has been employed.

Without introducing any of the vast number of recorded experiments, from the writings of Dr. Thomson, Saussure, or others of equal authority, it is quite certain that pure water is incapable of wholly supporting the growth of trees or plants. Its uses, however, to vegetation are many and important, and it is now generally believed that water is decomposed by plants,—the oxygen becoming partially evolved, and the hydrogen becoming in some degree assimilated with carbon and oxygen into a variety of vegetable substances, most of them containing hydrogen under some form or other. That distinguished philosopher M. Berthollet was of opinion, that when exposed to the light of the sun plants possess the power of decomposing water; while Dr. Thomson, as it were in corroboration of the above opinion, remarks,—"If we consider the great quantity of hydrogen contained in plants, it is difficult to conceive how they should obtain it, provided the water they absorb does not contribute to furnish it." Sir H. Davy, in one of his lectures, remarked,—"We can only reason from facts, we cannot imitate the powers of composition belonging to vegetable structures; but, at least, we can understand them; and as far as our researches have gone, it appears that in vegetation compound forms are uniformly produced from simpler ones; and the elements in the soil, the atmosphere, and the earth, absorbed and made parts of beautiful and diversified structures."

Although, as has already been stated, pure water alone is not sufficient to support vegetation,—the most ignorant and the blindest observer of nature's handywork cannot but be aware that the health and luxuriance of vegetation greatly depend upon a regular and copious supply of water, in one shape or another; and that in all living plants water forms no inconsiderable part of their bulk or solid contents: without moisture vegetation languishes and dies. It matters but little in what form, whether it be that of rain, or dew, or the water from the neighbouring brook or river, that it is supplied to the necessities of vegetation, though all waters are not, as they are ordinarily found, impregnated with the same earths or salts, nor contain those bodies in equal quantities; but the water which contains the largest quantity of earthy soluble matter is commonly considered as the most fertilizing.

Vegetation, being generally exposed to the atmosphere, can under no circumstances be destitute of a larger or smaller supply of water, for the atmosphere is always more or less charged with aqueous vapours, and so strong is the attraction which plants have for water, that their roots and leaves are constantly absorbing it from the atmosphere or the soil that is moistened with it; and nothing more clearly exhibits the beautiful arrangement of creative wisdom than this arrangement with regard to the moisture contained in the atmosphere, for during the hottest and driest of the summer months the quantity of aqueous vapour is by far the greatest, and if such were not the case the produce of the soil would become parched and burned, and vegetation would wither and die. In proportion as the evaporation is the greatest, so is the quantity of moisture contained in the atmosphere. Upon this point Sir H. Davy makes some observations to this effect:—When the soil is dry, and the life of plants seems to be preserved by the absorbent power of their leaves, it is a beautiful circumstance in the economy of nature that aqueous vapour is most abundant in the atmosphere—when it is most needed for the purposes of life, and that when other sources of supply are cut off, this is the most copious.

The quantity of water absorbed by plants under ordinary circumstances is very considerable; and it has been ascertained that most plants transmit into the atmosphere by insensible vapour a large quantity of water daily. A cabbage, for instance, has been found to transmit half its weight daily; and a sunflower of three feet in height has been ascertained to transpire nearly two pounds of water in the same period; while a sprig of spearmint, weighing twenty-seven grains, has been found to evolve during a long period a quantity of water amounting on the average to about ninety-one grains daily!

Attempts have been unsuccessfully made to induce plants to vegetate in earth which is perfectly dry, or in air from which all the aqueous vapour has been extracted. It may be true that there are certain plants in Eastern countries, and some mosses in our own, that are known to retain the vital principal for months or years after their removal from the places where they grew; but then the atmospheric air is not excluded from them in their severed state, so that requiring but a small amount of moisture to preserve life in them, this small quantity they still continue to imbibe from the surrounding atmosphere.

As the earths generally are soluble in water, it is through this medium that the different materials which constitute the solid portion of trees, shrubs, and plants are taken up and conveyed to every part of the structure; for without a fluid medium it would be impossible for lime, silica, or clay to be conveyed from the ground upon which plants grow, to the extremities of the finest arteries that extend to the offshoots and slenderest branches.

THE COCHINEAL INSECT, AND ITS PRODUCE.

When the Spaniards first visited Mexico, they were struck with the beautiful crimson-scarlet colour of many of the articles of furniture, cloth, ornaments, &c. possessed by the natives. Eager to possess such a beautiful dye, they received orders from the Spanish Cortes to attend to its production, and to forward supplies of it to Europe. The Spaniards found that the dye was obtained from little hemispherical shrivelled grains, about an eighth of an inch in length, roundish and wrinkled on one side, and flattish on the other. For some time these little grains were supposed to be the seeds of an Indian plant; but it at length became known that each apparent grain is the female of a small insect found in Mexico and the neighbouring countries; that the insect had been killed and dried for the market; and that the colouring-matter was obtained from it by steeping or by boiling in water.

Such was the origin of our knowledge of the true nature of *Cochineal*, a name which is given to these insects when in a marketable state. The researches of Humboldt and other travellers in Mexico have enabled us to understand the mode in which the natives cultivate this valuable produce.

All the cochineal grains are the *females* only of the insect called the *coccus cacti;* the males being found deficient in the colouring-matter for which alone the insect is valuable. The insect, in a natural state, attains to maturity, performs the ordinary functions of life, deposits eggs, and then dies—all within the space of two months; and the time of gathering is just before the laying of the eggs, when the insect has swelled to a great size. After the laying, the female becomes a mere husk, and is, as well as the male, of no value in a commercial point of view. It appears, therefore, as if the unborn insects furnish the principal part of the colouring-matter, and that only a sufficient number of the females are allowed to produce their brood to continue the race.

This being the source from whence the dye is obtained, we may proceed to describe the operation of the Mexicans in its cultivation. There is a wild species of cochineal, which feeds upon most of the species of cacti found in Mexico, requires no particular attention, and is gathered six times in the year. But the cultivated cochineal is the product of slow and progressive improvement on the breed of the wild species, and is found only in the gardens and plantations of Mexico, where, provided with its choicest food, and sheltered from the inclemencies of the seasons, it attains nearly double its original size. This feeds only on one species of cactus, the *cochenilifer*, or *Nopal*, and produces only three broods in the year.

In different parts of Mexico the natives follow somewhat different plans in the cultivation of the cochineal; but in the intendency of Oaxaca the chief features are as follow:—The Indians establish their *Nopaleries* (or plantations of Nopals) on the slope of mountains, or in ravines, two or three leagues distant from their villages. After cutting and burning the trees which may have covered the ground, they plant the young Nopals (a kind of small prickly-pear tree), and tend them carefully at intervals for three years, at the end of which time the sap or juice is plentiful enough to support the insects. The proprietor of the Nopalery then purchases, about the month of April or May, some branches of the *Tuna de Castilla*, laden with young cochineals, called *semilla*, recently hatched, which feed for the time on the juice of the branches. These branches, with the insects adhering to them, are hung up in caverns, or under a shed covered with a straw roof, or in the interior of a hut, for about twenty days; after which they are exposed to the open air. The insects grow very rapidly, and by about the month of August or September they are in a fit state to be taken to the Nopalery. For this purpose they are placed in nests, made of a species of Tillandsia called *partle*, and are carried to the nopalery, which, as we have said, is generally two or three leagues from the villages. The insects are placed among the leaves of the Nopal, to which the females immediately attach themselves, and never afterwards seem to wish to leave the precise spot where they first fix themselves. Here the insects are carefully watched during the short time which elapses before they lay their eggs: the utmost efforts of the natives being necessary to preserve them from other insects. The women squat down by the side of the nopal-trees for hours together, cleaning the branches from intrusive visitors by means of a stag's or squirrel's tail.

When the female insect has arrived at the state most profitable for the cultivator, it has swelled to such a size in proportion to its infant state, that the legs, antennæ, and proboscis are scarcely discoverable without the aid of a microscope. They are in that state removed from the nopal leaves by means of a blunt knife, and placed in earthenware pots, where they are carefully kept for a short time. In a certain stage of their progress they are killed in one of three ways, viz. by immersion in hot water, by exposure to fire, or by exposure to fierce rays of the sun; and it is owing to these different processes that the cochineals are sometimes of a deep and at others of a bright red. In the first-named mode, the insects are put into a bag, which is immersed in scalding water; in the second, the insects are placed upon shovels, which are introduced into an oven moderately heated,—the fine quality of the cochineal depending greatly on the temperature of the oven; in the last method, they are simply placed so that the scorching heat of the sun may act uninterruptedly upon them. Thus are these poor little creatures scalded or roasted to death, in order to furnish us with carmine and scarlet dyes.

As it is necessary, in order to perpetuate the race, that the gathering should not take place too soon, it is customary to effect it when the females have deposited about half the number of their eggs, which eggs are guarded as the source of a future harvest. In a good season they reckon that one pound of young cochineals, placed in the nopal-tree, produces, in three months, twelve pounds of mother-cochineals, rich in colouring-matter, together with sufficient progeny for the next gathering.

There are, of the *cultivated* cochineal, only three harvests or gatherings in a year; and at the last of these a certain number of females are left adhering to branches of the nopal, which are then broken off, and kept carefully under cover in the huts during the rainy season. But there are some districts, particularly around the town of Oaxaca, where the cochineal cultivators, called *Nopaleros*, cause the insects to *travel* during the rainy season. In that part of the country, the rain falls, in the plains and valleys, from May to October, while in the neighbouring mountains of Istepeje the rainy months are from December to April. Instead, therefore, of allowing the cochineals to remain within the huts during the rainy season of the plains the Nopaleros remove them. They place them, covered with palm-leaves, in canastos, or baskets made of very flexible claspers, which they carry on their backs as quickly as possible to the mountains above the village of Santa Catalina, nine leagues distant from Oaxaca. The mother-cochineals produce their young by the way; and on opening the canastos they are found full of young insects, which are immediately placed in the nopal-trees of the mountains. Matters thus remain

till the month of October, when the cultivators remove the insects back to the nopaleries of Oaxaca. It is a practice analogous to that followed with the Merino sheep of Spain.

Before speaking of the purposes for which cochineal is imported into Europe, we will make a short extract from Ward's 'Mexico,' tending to show the value of the commerce in these insects:—"The plantations of the cochineal-cactus are confined to the district of La Misteca, in the State of Oaxaca. Some of these Haciendas de Nopales (nopaleries, or nopal plantations) contain from fifty to sixty thousand plants, arranged in lines, like the aloes in the Maquey plantations, which I have already described, and cut down to a certain height, in order to enable the Nopaleros to clean them more easily. In the year 1758 a government registry-office was established at Oaxaca, in consequence of the complaints of some English merchants, who had received cargoes of adulterated cochineal, in which all the cochineal produced in the province was ordered to be examined and registered. By the official returns which I possess, it appears that the value of the cochineal entered upon the books of this office up to 1815, was 91,308,907 dollars, which, upon fifty-seven years, gives an average of 1,601,910 dollars per annum, without making any allowance for contraband, which has always been carried on to the amount of nearly half a million more. The number of pounds collected during the same time was 37,835,104." Mr. Ward, taking the amount of cochineal registered, and comparing it with the quantity known to be exported, estimates the value of cochineal annually sold in Mexico at more than two millions of dollars. It is such facts as these, taken in conjunction with the small amount of capital and labour required in the production, which have induced another writer to say that "the cochineal insect, considered as an article of commerce and manufacture, is of far greater importance to mankind than any other of the insect race;" and that "the discovery of this valuable insect has contributed more efficiently to enrich the posterity of the Spanish adventurers in the new world, than the wealthy mines of Peru and Mexico."

Our dyers and colour-makers purchase cochineal of the merchants, for the purpose of producing a brilliant crimson-scarlet colouring substance. The colouring-matter may be extracted from the dried insects either by water or alcohol; the solution or decoction produced having a very rich colour, and being capable of combination with other substances in a great variety of ways. The beautiful pigment called *carmine*, used principally in miniature and water-colour painting, and sometimes as *rouge*, to give a fictitious bloom of health to a blanched cheek, is a preparation of cochineal; it is a light, soft, velvety powder, of a most rich and magnificent scarlet, inclining a little to crimson. It is produced in various ways, each manufacturer deeming his own the best; but it is understood to be the result of boiling the cochineal in pure water for a certain time, adding alum and one or two other substances, evaporating the solution, and preserving the sediment in the form of carmine. After the finest quality has been thus produced, a repetition of the process produces a second quality; and even after this there is sufficient colouring-matter to assist in the preparation of the water-colour pigment called *lake*, which is a term applied to a mixture of alum, or of some metallic oxide, with a solution of a vegetable or animal colouring-substance.

The natural colour of cochineal is crimson, and until a peculiar mode of combining it with another substance was found out, the colour at present called scarlet was hardly known. Keffler, a German chemist, is said to have discovered accidentally, about two centuries ago, that a solution of tin would exalt the crimson colour of cochineal into a scarlet. He brought his secret to London; and the first establishment for dyeing scarlet in this country appears to have been at the village of Bow, whence it obtained for a long time the name of the *Bow-dye*. About the year 1667 a Fleming named Brewe, invited over by Charles II., with the promise of a large salary, is said to have brought the art of scarlet-dyeing to great perfection.

A chemical analysis of the constitution of the cochineal, and a summary of the commercial statistics of the trade at the present day, will be found in the 'Penny Cyclopædia.'

MOLES.

A correspondent from Wix, near Harwich, has communicated to us some curious facts respecting moles, and in defence of their utility. The subject is of sufficient importance to induce us to lay the writer's ideas before the public, and the more so as the late James Hogg, the Ettrick Shepherd, was of nearly the same opinion. He had observed that in lands tenanted by the mole, the foot-rot in sheep was much less prevalent than where they had been extirpated.

"In the article on Mole-catching, in No. 608, you have considered the mole as always injurious to the occupiers of land. But from long and attentive observation, I feel satisfied that no animal is more beneficial in its calling. The farmer, I think, ignorantly and wantonly causes it to be destroyed; but were he to reflect a little and make a few observations, he would in most cases protect and not destroy those innocent and very interesting assistants to his labours. They destroy the wire-worm and all kinds of grubs deposited in the ground; and so beneficial is this, that I have seen many fields of corn greatly injured, if not ruined, by the moles not being permitted to work in them; but I never saw a field of corn injured by their working to any extent worth speaking of. If I can avoid it, I never allow them to be trapped; but the year before last, I had one field of wheat in which they were busily at work. I was anxious to preserve them, but in my absence a neighbouring mole-catcher entrapped them. Exactly at the place where I saw their little hills of earth, and for about an acre farther into the field, the wire-worm entirely destroyed my wheat. Last spring was very dry, and the wire-worm was very prevalent. I had some oats greatly injured by them, but the poor moles were destroyed in an adjoining neighbour's field; and I made it my business to examine many places in the neighbourhood where traps were set. In one field I saw eight traps set in a circle nearly, surrounding about an acre of wheat. I examined the spot, and found the worm at the roots of almost all the plants; yet the farmer was destroying the only friends that could have preserved his grain. Several other fields I examined where traps were set in the same manner, and the result was always the same. Some years since, in passing with a bailiff over a large field that had been a wood, he observed that it would grow nothing on account of the wire-worm. I said to him, 'Get some moles and turn them into it.' 'Why,' said he, 'we cannot keep them out—we destroy scores every year in it.' I said again, 'Do not destroy them.' The bailiff followed my advice, let the moles have their full play in the field, and from that time the crops have been excellent. Should you, therefore, write again in your excellent Magazine on this subject, I hope you will say a word in favour of the poor persecuted, but useful and innocent mole."



a, Polecat; b, Stoat; c, Beech Marten; d, Ferret; e, Weasel.

THE WEASEL TRIBE OF THE BRITISH ISLANDS.

By the weasel tribe we mean the ferocious bloodthirsty little animals included by authors in the genus Mustela, of which we have in England, including the domesticated ferret, six species, namely, the weasel, the ermine or stoat, the polecat, the ferret, the beech marten, and the pine marten, the two latter constituting a subgenus.

Were these carnivorous creatures as large and powerful as they are active, wily, and daring, they would be more formidable than the lion or the tiger, and infinitely more destructive, as they kill, when opportunity offers, by wholesale, sucking the blood and devouring only a portion of their victims, thereby effecting a waste of life within the sphere of their predatory operations.

Subtle and bold, the weasel tribe usually take their prey by surprise, and no animals are better endowed by nature for an insidious attack. Their form is long and slender; and such is their snake-like pliability, that they can twist themselves in the most extraordinary manner, and insinuate themselves into holes or crevices

which one would think it impossible for them to enter. The limbs are short but powerful, and the toes are armed with sharp claws; hence they climb trees, or the sides of rough walls or buildings, with great agility. In their movements they appear to glide along, but they can bound and spring with considerable vigour, and know well how to fasten on their adversary.

In attacking their victim they generally aim at the neck, below the ear, where they pierce the large veins with their teeth; or they fix upon the back of the head, and drive their canine teeth through the skull.

Their habits are nocturnal or crepuscular. The day is passed in their retreats, such as the hollows of decayed trees, burrows in the ground, holes in walls and ruined masonry, and fissures in rocks. As evening shades prevail, they rouse from their repose and begin their prowl.

A polecat in the neighbourhood of a farm-yard is as mischievous as a fox, and even more so; whole broods of chickens are often all destroyed during a single night, and the bodies left on the spot. The shortness of the muzzle, the arrangement of the teeth, and the solidity of the skull, afford a good index of the natural habits of these animals. In the skull of the common polecat (*Mustela Putorius*) we find the distance from the anterior edge of the orbit to the front teeth three-quarters of an inch, while from the same point to the back of the skull or occiput the admeasurement is two inches and one-eighth. The skull is long and flattened in its contour, and a broad space of seven lines intervenes between the orbits. The dentition is as follows:—upper jaw, incisors six; canines on each side, one; false molars on each side, two; followed by a tricuspid lasiary molar, to which succeeds a bi-lobed tubercular molar. In the lower jaw the false molars are three. The subgenus Martes is distinguished by the muzzle being somewhat more lengthened, and by an additional rudimentary false molar in each jaw.

In accordance with the contour of the skull, the head presents a triangular flattened shape, and terminates a long flexible neck. The eyes are sharp and piercing; the ears small; and the senses of sight, smell, and hearing are acute. In all the species the subcaudal glands secrete a fluid of unpleasant odour, and especially so in the polecat.

The polecat, or, as it is called in various counties, fitchet, or foumart, is very common in some parts of our island, where the farmer and the sportsman make common cause against it; for both hold it as detestable "vermin." To the farmer, indeed, it often occasions serious losses. We have often heard persons in the wilder parts of Derbyshire lament, with sundry vows of vengeance, the desolating results of a nightly visit of one of these pests to the poultry-yard. Poultry, young and old, ducks, and even geese and turkeys, fall a prey to its sanguinary disposition; nor is it contented with killing one and making a meal, but all within its reach are sacrificed. Mr. Bell instances one case in which sixteen large turkeys were killed by a polecat during the course of one night; and another in which ten ducks were similarly destroyed; and the perpetrator of the outrage, when in the morning the door of the outhouse in which they were shut was opened, marched out, licking his bloody jaws, without the slightest alarm. Many similar instances have come under our own personal knowledge. The predilection of the polecat for the brains and the blood of poultry is well known: it seldom touches the rest of the carcass; and we may here observe that rats display the same taste for the brains of birds. We could adduce many instances, within our own knowledge, in which birds kept in aviaries have been destroyed by rats, the brain of the victims being in every case eaten out of the skull.

It is generally in winter that the polecat haunts the farm-yard; in summer it resorts to plantations, woods, and preserves of game, where it makes sad havoc among leverets, young partridges, and pheasants; nor are the nests of birds safe from its attacks, the eggs or callow brood being equally acceptable. No animal is so pernicious in a rabbit-warren; it can follow its prey throughout their subterranean galleries, which the fox cannot do; besides which its love of slaughter seems insatiable. Buffon indeed with some justice observes that a single polecat will speedily depopulate a warren of considerable extent. It would seem that the tenants of the water are not safe from the attacks of this animal; Mr. Bewick, on his own testimony, affirms that in one instance eleven fine eels were discovered in the retreat of one which inhabited a bank near a rivulet, to which its nocturnal visits were rendered apparent by tracks in the snow, both of its feet and of the writhing eels. In Loudon's 'Magazine' (vol. vi., p. 206) an instance is related in which the nest of a female polecat was opened, containing five young ones; while in a side hole were packed forty large frogs and two toads, barely alive, each having been paralyzed by a bite through the brain.

The polecat makes a vigorous resistance when attacked either by a dog or man, and will defend itself to the last.

The female breeds in the spring, making a nest of dry grass in her burrow; the young are from three to five in number. The adult polecat measures about one foot four or five inches, exclusive of the tail, which is comparatively short. The body is covered with a woolly under coat; and this, with the base of the long hairs which form an outer garment, is of a pale yellow; the extremities of the long hairs are of a deep glossy blackish brown. The margins of the ears and part of the lips are white. Though by no means so valuable as that of the sable or marten, the fur of this animal (known generally by the name of Fitch) is imported very extensively from the North of Europe, and is abundant in the furrier's shops in our metropolis. Closely allied to the polecat is the ferret (*Mustela Furo*); so closely indeed, that many naturalists regard them as mere varieties of the same species;—the more especially as a mixed breed between them may be procured. This opinion however is not, we think, correct; the polecat is a native of temperate and northern Europe; the ferret, of Africa, whence, as we are told by Strabo, it was imported into Spain for the purpose of destroying rabbits, with which, at one period, that country was injuriously overrun. From Spain it has spread through the rest of Europe, not as a wild, but as a domesticated animal. From the earliest times the ferret was used in the capture of rabbits, by being turned muzzled into their burrows. Pliny alludes to the practice in his eighth book.

The colour of the ferret is yellowish-white, but we have frequently seen specimens of a brown colour; these indeed were said to be of the mixed breed between the polecat and ferret, and probably were so, as they were always larger and stouter than the white. One of the brown kind, in the possession of a relative of the writer's, was so tame as to be allowed the liberty of the house, and it slept in his chamber—a dangerous experiment, as instances have been known of their attacking persons and wounding them severely. An instance in which an infant nearly fell a sacrifice to a ferret is related by Mr. Jesse in his 'Gleanings,' and quoted by Mr. Bell The child had the jugular vein and the temporal artery opened; the face, neck, and arms lacerated, and the sight of one eye destroyed. The ferret is not only employed by the warrener, but also by the ratcatcher, who prefers the mixed breed.

The ferret is very sensitive of cold, and requires to

be kept snug and warm, especially during winter, as it perishes if exposed to the severity of the season.

The weasel (*Mustela vulgaris*) is so well known, that any description of its form and colour is useless. Small as this animal is, it has all the courage and ferocity of its race, and will prey upon leverets, chickens, young pigeons, and ducklings; its favourite food however are mice, rats, water-rats, and even moles. In the farmer's stack-yard and granary it is of the greatest utility, and well repays by valuable services the occasional abstraction of a chicken, a pigeon, or a few eggs. Of this indeed many farmers are well aware, and encourage it for the sake of the incessant warfare it keeps up against mice and rats, which, from their excessive numbers, often occasion a serious loss in grain, besides undermining the barns and outhouses.

The weasel climbs trees and runs up the side of a wall with facility, its movements being singularly graceful. When it attacks its prey, it fixes its teeth on the back of the head, and pierces the brain, which it then devours. It is said to prefer putrid flesh to that just killed, but this is very doubtful, and has arisen most probably from the circumstance of dead birds in a putrid state having been found in its hole or near its retreat, left by their destroyer. The weasel hunts by the scent, like a dog; and follows mice and moles with the utmost perseverance, tracking them through all their runs or winding galleries. It will even cross the water in the pursuit, if its prey be in sight, nor does swiftness avail, for onwards will the weasel travel, till its victim fails from exhaustion. The wolverene of North America (*Gulo arcticus*) pursues the beaver and other prey in a similar manner.

Instances are on record in which several weasels have united in attacking men, who with difficulty have prevented the fierce little animals from lacerating their throats, and certainly twelve or fifteen weasels would prove no mean adversaries.

The weasel often falls a prey to hawks, owls, and kites; but sometimes succeeds in coming off victorious. Many anecdotes are on record of weasels and stoats bringing eagles or large hawks to the ground—and Mr. Bell gives an instance, assuring us of its truth, in which a kite that had seized a weasel and mounted into the air, was observed to wheel irregularly, and at length to fall to the ground dead; the determined little animal have torn open the skin and large blood-vessels under its wing.

The weasel breeds two or three times in a year, having a litter of five at each birth. She makes her nest of dried herbage; a hole in a bank side, among brambles, or in an aged tree, is the usual place of her retreat; and when molested, she defends herself and her progeny with indomitable courage.

The stoat (*Mustela erminea*) is allied very closely to the weasel, but is considerably larger, being upwards of nine inches long, excluding the tail. Its habits are precisely those of the weasel, but it preys habitually on larger game, as hares, leverets, &c., not excluding the rat and water-rat. Of the latter, indeed, it destroys great numbers, following them into their burrows. It hunts its prey by the scent. Some idea of the extent of the depredations of this animal may be conceived from the circumstance of two leverets, two leverets' heads, two young partridges, and a pheasant's egg having been found in the retreat of one. In our climate the stoat becomes partially white during the winter, but in more northern regions this change is complete, the tip of the tail alone remaining black. In this state it is called the ermine. Large importations of ermine-fur are made from Russia, Norway, and Siberia to our country. In 1833, the importation amounted to 105,139 skins.

The beech marten (*Martes Fagorum*) and the pine marten (*Martes Abietum*) are both natives of our island; but the former, distinguished by a white breast, is said to be the most common. The pine marten is distinguished by a yellow breast and throat. It must be confessed, however, that the specific distinction between these two animals is by no means very apparent, nor indeed is it admitted by many. We have many times seen the yellow-breasted or pine marten in the fir-woods which clothe the sides of some of the hills in Derbyshire, and especially near Buxton. It prefers wild and unfrequented places, deep wooded glens, and the depths of forests; and is common throughout northern Europe. The beech marten also frequents woods, but not so exclusively as the former, and often lurks about farm-houses and destroys poultry. Both are destructive to game. They take up their retreats in hollow trees or holes in rocks, and the female makes a nest of leaves and moss for her brood. The agility and gracefulness of these animals are remarkable; they climb trees with the ease of the squirrel, and traverse their branches or leap from bough to bough with admirable address and celebrity. Their fur, especially that of the pine marten, is full, deep, and soft, and of a beautiful brown, and not far inferior to that of their immediate ally the sable. The marten exceeds the polecat in size, and the tail is long and bushy. The ears are large and open, and the eyes bright and lively. In general instincts they agree with the other Mustelæ.

Our plate represents the Beech Marten, the Polecat, the Ferret, the Weasel, and the Stoat.

The Norwegian Bonder, or Small Landowner.—If there be a happy class of people in Europe, it is the Norwegian bonder. He is the owner of his little estate; he has no feu-duty or feudal service to pay to any superior. He is the king of his own land, and landlord as well as king. His poor-rate and tithes are too inconsiderable to be mentioned. His scat or land-tax is heavy, but everything he uses is in consequence so much cheaper; and he has that which renders the heaviest tax light,—the management of it by his own representatives, and the satisfaction of publicity and economy in its application. He has the satisfaction of seeing, from Storthing to Storthing, that the taxes are diminishing, and the public debt paying off. He is well lodged; has abundance of fuel; and that quantity of land, in general, which does not place him above the necessity of personal labour, but far above want or privation, if sickness or age should prevent him from working. He has also no class above him; nobody who can look down upon him, or whom he or his family look up to, either to obtain objects of a false ambition or to imitate out of a spirit of vanity. He has a greater variety of food than the same class in other countries; for besides what his farm produces, which is mostly consumed in his housekeeping, the fjelde, the lakes and rivers, and the fiords afford game, fish, and other articles. He has also variety of labour, which is, perhaps, among the greatest enjoyments in the life of a labouring man; for there is recreation in change. His distant seater (tract of land on the moors), his wood-cutting for fuel, his share of the fishery in the neighbouring river or lake, give that sort of holiday-work which is refreshing. His winter toil is of the same kind; as steady agricultural labour in the field is out of the question. It consists in making all the implements, furniture, and clothing that his family may require; threshing out the crop, attending to the cattle, distilling his potatoes, brewing, and driving about to fairs or visits. The heaviest part of it is driving wood out of the forests, or bog-hay from the fjelde. He has no cares for his family, because he knows what their condition will be after his death. He knows that his wife succeeds to him, and as long as she lives unmarried the only difference made by his death is, that there is one less in the family. On her death or second marriage, he knows that each of his children has a right to a share of his property; and according to their number he makes his arrangements for their either living on the land as before, or dividing it, or for being settled in other occupations, and taking a share of the value when it comes to be divided.—*Laing's Norway.*



[Miller, Manciple, and Reve.]

CHAUCER'S PORTRAIT GALLERY.

THE MILLER AND THE REVE.

SCARCELY has the good Knight told his noble story of 'Palemon and Arcite,' and the Host expressed his delight at the manner in which his scheme has been practically carried out, before

> "The Miller, that for drinking was all pale,
> So that unethes* upon his horse he sat,"

begins to swear rudely that he too can tell a tale, in return for the Knight's. The Host, not a little indignant at this insubordinate conduct, but like a man whom experience in the matter had taught wisdom, gently endeavours to keep him within due bounds, and tell his tale at the proper time. But the Miller is obdurate, so the host testily cries out—

> "Tell on a devil way,
> Thou art a fool; thy wit is overcome;"

and the Miller begins. We shall have occasion again to return to this story; in the mean time, here is Chaucer's portrait of the relater:—

> "The Miller was a stout carle for the nones;
> Full big he was of brawn and eke of bones;
> That provéd well, for over all there he cam.†
> At wrestling he would bear away the ram.
> He was short shouldered, broad, a thické gnarre*,
> There n'as no door that he n'old heave off bar,
> Or break it, at a running, with his head.
> His beard as any sow or fox was red,
> And thereto broad, as though it were a spade.
> Upon the cop † right of his nose he had
> A wart, and thereon stood a tuft of hairs
> Red as the bristles of a sowés ears.
> His nosé-thirlés ‡ blacké were and wide;
> A sword and buckler bare he by his side.
> His mouth as wide was as is a furnáce,
> He was a jangler § and a goliardeis,
> And that was most of sin and harlotries.
> Well could he stealen corn, and tollen thrice||.
> And yet he had a thumb of gold, pardié.
> A white coat and a blue hood wearéd he.
> A baggepipe well could he blow and soun,
> And therewithal he brought us out of town."

The wrestling matches here alluded to, and the prize generally awarded to the conqueror, are genuine old English customs. About a hundred and sixty years before the period of the composition of the 'Canterbury Tales,' we find recorded the particulars of games of this kind held at Westminster, which were attended by serious consequences. Stow, in his 'Survey of London,' says, "I read that in the year 1222, and the

* Uneasily.

† Or, in other words, was the tallest as well as biggest of the pilgrims.

* A gnarre is a hard knot in a tree; it seems here to illustrate the round, rough, and muscular character of the Miller's body.

† A Saxon word, signifying the top of anything.

‡ The old form of the word nostrils.

§ Babbler. || That is to say, cheat in his reckoning.

6th of King Henry III., on St. James's day, the citizens of London kept games of defence and wrestling, near to the hospital of Matilda, at St. Giles in the Fields, where they got the mastery of the men in the suburbs. The bailiff of Westminster, desiring to be revenged, proclaimed a game to be at Westminster upon Lammas day, whereunto the citizens repaired." When they had played awhile, the bailiff and the men of the suburbs, armed, treacherously fell upon the unsuspecting citizens, and drove them into the city; and a formidable riot ensued, in which many houses were pulled down. The ringleaders in the riot were hanged.

The Miller, it appears, is a "goliardeis," an appellation derived, according to Tyrrwhitt, from a jovial sect, who borrowed it from Golias, the real or assumed name of a witty writer of the latter part of the twelfth century, who published several pieces in burlesque Latin rhyme; but the original source of the English word seems to be the French *goulis*, greedy, which is supported by a very pertinent passage in 'P. Plowman's Visions:'—

"Then grieved him a Golearden, a glutton of words."

With respect to the allusion in the text to the "thumb of gold," Mr. Tyrrwhitt says, if it refers, "as is most probable, to the old proverb, 'Every honest miller has a thumb of gold,' the passage may mean, that our Miller, notwithstanding his thefts, was an honest miller, that is, as honest as his brethren;" to ourselves it appears much more probable that the line coming immediately after the notice of his thefts—

"And yet he had a thumb of gold, pardié,"

is a bit of satire directed either at the Miller's own pretensions to honesty, or at the pretensions of his brethren of the white coat generally. On this subject we have also the following curious and interesting illustration in Mr. Yarrell's beautiful work on 'British Fishes:'—"It is well known that all the science and tact of a miller are directed so to regulate the machinery of his mill that the meal produced shall be of the most valuable description that the operation of grinding will permit when performed under the most advantageous circumstances. His profit or his loss, even his fortune or his ruin, depends upon the exact adjustment of all the various parts of the machinery in operation. The miller's ear is constantly directed to the note made by the running-stone in its circular course over the bed-stone; the exact parallelism of their two surfaces, indicated by a particular sound, being a matter of the first consequence; and his hand is constantly placed under the meal-spout, to ascertain by actual contact the character and qualities of the meal produced. The thumb, by a particular movement, spreads the sample over the fingers: the thumb is the gauge of the value of the produce; and hence have arisen the sayings of 'Worth a miller's thumb,' and 'An honest miller hath a golden thumb,' in reference to the amount of the profit that is the reward of his skill. By this incessant action of the miller's thumb, a peculiarity in its form is produced, which is said to resemble exactly the shape of the head of the fish constantly found in the mill-stream, and has obtained for it the name of the miller's thumb, which occurs in the comedy of 'Wit at several Weapons,' by Beaumont and Fletcher, act 5, scene 1; and also in Merrett's 'Pinax.' Although the improved machinery of the present time has diminished the necessity for the miller's skill in the mechanical department, the thumb is still constantly resorted to as the best test for the quality of flour."

The spade-like beard remained till a comparatively very recent period, to form the name of one of the distinctive modes of dressing that appendage. Such is the man who now interferes to tell his tale out of due course; and having obtained permission, precisely because it was useless to refuse it, he begins, "Now hearkeneth" all and some:—

"But first I make a protestation
That I am drunk, I know it by my soun;
And therefore if that I mis-speak or say,
Write it the ale of Southwark, I you pray."

With this very prudent warning, he continues—

"For I will tell a legend and a life
Both of a carpenter and of his wife," &c.,

when he is himself interrupted by the Reve; and for a reason which the description in the prologue will make apparent:—

The Revé was a slender choleric man,
His beard was shav'd as nigh as ever he can;
His hair was by his earés round yshorn;
His top was docked like a priest beforn.
Full longe were his legges, and full lean.
Ylike a staff, there was no calf yseen.
Well could he keep a garner and a bin:
There was no auditor could on him win.
Well wist he by the drought, and by the rain,
The yielding of his seed and of his grain.
His lordes sheep, his neat*, and his dairy,
His swine, his horse, his store, and his poultry,
Were wholly in this Revé's governing;
And by his covenant gave he reckoning,
Since that his lord was twenty years of age:
There could no man bring him in average.
There n'as bailiff, ne herd†, ne other kine‡,
That he ne knew his sleight and his covine§:
They were adread|| of him as of the death.
His wonning was full fair upon an heath,
With greené trees yshadowed was his place:
He coulde better than his lord purchàse.
Full rich he was ystored privily:
His lord well could he pleasen subtilly,
To give, and lean¶ him of his owen good,
And have a thank, and get a coat and hood.
In youth he learned had a good mistere**,
He was a well good wright, *a carpenter*.
This Revé sat upon a right good stot††,
That was all pomelee‡‡ gray, and highté Scot.
A long surcoat of perse§§ upon he had,
And by his side he bare a rusty blade.
Of Norfolk was this Reve, of which I tell,
Beside a town men clepen Baldeswell.
Tucked he was, as is a frere, about,
And ever he rode the hinderest of the rout."

The Miller's remark, however, soon brings him forward. The cautious, calculating, reserved Reve, stung by the anticipated ridicule of the class to which he had once belonged, forgets alike his reserve, his schemes, and his caution, and amidst the ill-suppressed mirth of the pilgrims, calls out,—

"Stint thy clappe,
Let be thy drunken harlotry," &c.

But he has a man to deal with whom nothing can move from his purpose, and who is still less likely to "stint" when he sees so much matter for malicious enjoyment before him. The tale he tells is one of Chaucer's

* Neat cattle. † Herdsman. ‡ Hind.
§ His secret contrivances or tricks. || Afraid.
¶ Incline, or bend him to his (the Reve's) own good or purposes. ** Mystery, or trade.
†† In the North this word is still used, but in connection with a bullock only. In Sir David Lyndsay, as well as in Chaucer, we find it applied to a horse. There is little doubt the word came from beyond the border, for in the next line we see the animal is "highte *Scot*."
‡‡ Dappled. §§ A bluish-grey or sky colour.

richest and broadest, and the laugh at its conclusion is loud and long. The Reve alone looks gloomy,—

"A little ire is in his heart yleft."

But says he,—

———"Full well could I him quite,
With blearing of a proud miller's eye,
If that me list to speak of ribaldry.
But I am old; me list not play for age;
Grass time is done, my fodder is now forage*:
This white top writeth mine oldé years,
Mine heart is also moulded as mine hairs."

In a similar strain he continues for some time to pour forth his reflections (one fine line we must not pass unnoticed,—

"We hop alway, while that the world will pipe"),—

till the host, who has a mortal dislike of "sermoning," calls out,—

"What amounteth all this wit?
* * * *
Say forth thy tale, and tarry not the time.
Lo! Depéford†, and it is half way prime:
Lo! Greenewich; there many a shrew is in:
It were all time thy talé to begin."

Thus admonished, the Reve commences a story, which certainly does not spare, by reflection, the Miller, or fail to requite him in his own coin.

In the Sutherland manuscript, "the Reve" presents us with an admirable portraiture of Chaucer's pilgrim. He is evidently as choleric as he is thin. He is represented closely shaved, his hair rounded about the ears like the "crop-ears" of a later time, and docked at the top like a priest. He wears a blue garment, scarlet hood, and scarlet stockings; also a sword of enormous size. Warton's observations on this character are so just, apposite, and complete, that we cannot better conclude than by transcribing them:—"He was an officer of much greater trust and authority during the feudal times than at present. His attention to the care and custody of the manors, the produce of which was then kept in hand for furnishing his lord's table, perpetually employs his time, preys upon his thoughts, and makes him lean and choleric. He is the terror of bailiffs and hinds, and is remarkable for his circumspection, vigilance, and subtlety. He is never in arrears, and no auditor is able to over-reach or detect him in accounts; yet he makes more commodious purchases for himself than for his master, without forfeiting the good will or bounty of the latter. Amidst these strokes of satire, Chaucer's genius for descriptive painting breaks forth in the simple and beautiful description of the Reve's rural habitation,—

"'He had his wonning fair upon an heath,
With greené trees yshadowed was his place.'"

* "Fodder, being a general name for meat given to cattle in winter, and of affinity with food applied to man and beasts, doth only signify meat. And so the sense is, my meat is forage, that is, my meat is such hard and old provision as is made for horses and cattle in winter.—*F. Thynne's Animadversions.*

† The spelling here is a proof, if any were needed, of the origin of the name Deptford.

THE ANEMOMETER, OR WIND-GAUGE.

THERE may be many persons who are unable to conceive the use of a *wind-gauge* or *wind-measurer*, since wind is nothing more than the motion of particles of air; a motion, too, singularly variable and unequal. It is, however, possible that if by careful observation we could discover any law in the fluctuation either of the force or direction of the wind, considerable aid would be afforded in the solution of many problems relating to the weather; and meteorologists have therefore devised instruments called wind-gauges, or 'anemometers' (measurers of wind), for determining in some degree the force of the wind.

Every one is aware that a *vane* tells us the direction from which the wind blows, and no other instrument is therefore necessary for this purpose; but to determine the *force* of the wind, other arrangements are necessary. It has been found that a wind moving at the rate of twenty feet per second exerts a moving force equal to twelve ounces on a flat surface one foot square opposed perpendicularly to it; and this furnishes something like a standard by which other velocities of wind may be measured. Dr. Lind, of Edinburgh, measured the moving force of wind by its pressure on the surface of water. His anemometer consists of two glass tubes five or six inches in length, and half an inch bore, connected together at the bottom like a siphon by means of a small tube one-tenth of an inch bore. From the upper part of one leg of this siphon a bent tube projects nearly horizontally, something like the spout of a tea-kettle; and this spout is turned towards the quarter from whence the wind is blowing. A certain quantity of water being introduced into the siphon, the wind, entering one of the legs at the open orifice, presses on the water, and forces an additional portion up the other leg of the siphon. The difference in the levels of the water in the two branches, occasioned by this displacement, affords the means of measuring the force and velocity of the wind.

Bouguer, a French philosopher, contrived an anemometer in which the wind pressed against a wooden board, whose movement consequent on this pressure was resisted by a spring; and a dial-plate and index were so placed as to indicate the force with which the board had been pressed by the wind.

Mr. Martin, during the last century, devised an arrangement by which a wheel of four sails, set in motion by the wind, caused a cone to rotate on its axis, and to draw up a weight by a rope coiled round the cone. As the weight was wound up, the rope passed gradually to a larger and larger part of the diameter of the cone; and this diameter was made to measure the force by which the sails were propelled.

Sir John Leslie, having found in the course of his experiments on heat that the *cooling* power of a current of air is exactly proportional to its velocity, derived from this principle the construction of a new anemometer, which was in fact nothing more than a thermometer with a large bulb. The instrument was held in still calm air, and the temperature noted; the bulb was then warmed by the hand, and the time noted which it took to cool back to the former point; it was then exposed to the wind, and the cooling effect marked. From these combined operations, aided by a little calculation, an approximation was obtained to the velocity of the wind which had been blowing on the bulb.

But all these instruments, and many others which we shall refrain from describing, were so defective, and gave results so little to be depended on, that meteorologists took very little account of them; and it was not until the British Association commenced its labours that any marked improvement was made. We perhaps cannot better give an idea of the anemometer as it at present exists, than by tracing the proceedings of the Association in this matter.

In 1832 Professor Forbes said:—"I think that if the anemometer is ever to become an available meteorological instrument, it must be on some principle of self-registration, such as I proposed about two years ago. Either by a piece of clock-work, or some simple movement put in action by the wind itself, I proposed that small spherules of wood or other light matter, or even

shot, should be let fall through a free space, suppose of three feet, and that the force and direction of the wind should at once be measured, at every interval of the falling of a spherule, by the amount and direction of the deflexion produced, and which should be ascertained by the dividing into compartments a platform arranged to receive them." We are not aware that this plan has ever been carried out in practice, though Professor Forbes thinks that it is a method admitting of great accuracy.

At the Dublin meeting in 1835, Professor Whewell described the construction and purpose of an anemometer, which seems destined to render important service to meteorological science; he stated that several were in the course of construction, with a view to their being tried in different places; and he hoped that in the following year some additional information might be obtained respecting its action. Accordingly, at the Bristol meeting in 1836 further details were given concerning the instrument. Its object is not to determine the actual *force* of the wind at any given moment, but to obtain a record of the total *amount* of aërial current which passes the place of observation in any given direction. It performs four offices, viz. to show the direction from which the wind blows, the successive changes in that direction, the amount of wind in each direction, and records its own results with a pencil. These objects are attained in a very ingenious manner. The instrument consists of a small wheel (like a windmill with eight sails), which is kept towards the wind by a vane. The rapid rotation of the wheel by the action of the wind is, through the medium of a train of toothed wheels and screws, converted into a slow vertical motion, which is imparted to a piece of crayon or other pencil. The number of teeth in the wheels and threads in the screws is such, that ten thousand revolutions of the wheel produce a vertical motion of only one-twentieth of an inch in the pencil. The pencil, as it travels downwards, traces a line on the surface of a white-varnished vertical cylinder, which has an axis coincident with the axis of the vane. The consequences of this arrangement are, that the greater amount there may be of wind, the lower does the pencil-mark descend on the cylinder; and that when the wind changes its direction, the mark falls on a different part of the circumference of the cylinder. As a record of the phenomena, therefore, the extent of vertical motion shows the amount of the wind; and the part of the circumference of the cylinder in which the trace lies shows the direction. In giving the results numerically, the vertical height of the line is measured by means of a graduated scale attached to the instrument; while the part of the circumference on which it is traced is indicated by the points of the compass depicted on it. It will be evident from this description that the instrument does not measure the length of time during which any one wind is blowing, but the amount of force or power exerted by it before it changes its direction.

It was announced at the same meeting that anemometers of this construction were to be erected, and regularly observed, at Cambridge, York, and Plymouth, and that the results would be given at the next meeting. Accordingly, at the Liverpool meeting in 1837 it was stated that the instruments were in active use, and that Professor Challis had obtained a sort of map of the winds, as given by the anemometer at Cambridge. This was deemed very important, because it gave the actual quantity of wind blowing from each quarter; whereas in the ordinary way of registering even the direction of the wind, which is by stating the length of time it blows from a certain point of the compass, the velocity of the wind is altogether left out of account, and the "high wind" or "storm" of one day is placed on a par with the "gentle breeze" of the next.

The Association placed 10*l.* at the disposal of Mr. Snow Harris, for the perfection of the anemometer at Plymouth; and at the Newcastle meeting, in the next year, a very extensive series of tables indicative of the results obtained was given to the Association.

Last year, at the Glasgow meeting, Mr. Snow Harris made a report on certain improvements which had been made in the instrument, and on the result obtained; and he there made a remark with which we shall conclude our notice of this instrument:—"The want of an instrument which could figure at once the direction and proportionate velocity of a given current, so as to obtain an integral result, has been long felt in meteorology. Common anemometers merely register the time of a given wind from a certain point, and leave its velocity out of the question; and although others of a more improved kind register also its pressure on a given area, there are none, so far as I know, which give the complete and truly valuable result obtained from Mr. Whewell's, viz. the total quantity or integral effect of the wind at a given place."

But there is another form of anemometer which has been brought into use principally by the encouragement of the British Association, and which is considered to possess valuable properties, viz. that of Mr. Osler. This instrument was placed in the Philosophical Institution at Birmingham in 1837, and a description of it given at the Liverpool meeting. The direction of the wind is obtained by means of a vane, which is attached to a supporting tube, and makes the latter rotate with it. At the lower extremity of this tube is a small pinion working in a rack, which slides backwards and forwards as the wind moves the vane; and to this rack is attached a pencil, which marks the direction of the wind on a paper ruled with the cardinal points, and so adjusted as to progress at the rate of one inch per hour, by means of a clock. So far for the *direction* of the wind; the *force* is registered as follows:—This force is ascertained by a plate, one foot square, placed at right angles to the vane, supported by two light bars running on friction rollers, and communicating with a spiral spring in such a way that the plate cannot be affected by the wind's pressure, without instantly acting on this spring, and communicating the quantum of its action, by a light wire passing down the centre of the tube, to another pencil below, which thus registers the degree of force. There is also a provision for measuring the quantity of rain which falls; but with this we have nothing further to do here.

There are in this instrument, it will be seen, four separate provisions with regard to the wind: the vane indicates the direction in which the wind is blowing; the square tablet, the spring, and the wire, indicate the force of the wind; the two pencils record these indications on the paper; and the equable motion of the paper by wheel-work apportions the several gradations of direction and force to the time of the day when they occurred. These objects are so numerous, and the arrangements of the instrument so complicated, that considerable difficulty has been experienced in bringing it to working condition. Forty pounds were placed by the Association in the hands of Mr. Harris for the construction of an anemometer on Mr. Osler's plan; and in the two following years, very copious registers were presented to the Association, of observations on the wind made by this instrument at Plymouth; while at the 1840 meeting a similar register was given of the observations made at Birmingham. These latter observations were characterised by Sir D. Brewster at the same meeting as "observations of inestimable value, which exhibit more important results respecting

the phenomena and laws of wind than any which have been obtained since meteorology became one of the physical sciences."

We may look forward in future to much improvement in those columns of our almanacs and calendars which relate to the wind, both from the use of such instruments as these, and from the careful observations which are being made both in this country and on the Continent. As a proof of the advances which are now being made, we may adduce a few instances given by Professor Forbes in his Report on Meteorology, 1840. M. Dove, of Berlin, has shown that when the wind changes, it generally does so from *right to left*, rather than from left to right; that is, it appears to shift its quarter in the direction which the hands of a watch take. But he further remarked that this direction is changed in the southern hemisphere, being S., E., N., W., instead of S., W., N., E., as in the northern. It is not meant to infer that in England, for instance, which is in the northern hemisphere, a wind when it changes from S. *always* veers towards W.; but that it has a tendency rather to do so than to veer towards E. The manner in which these various winds affect the pressure, temperature, and humidity of the air, or are affected by them, is yet very little known; but M. Dove, from a long series of observations, has been led to the conclusions that in the northern hemisphere—

The *Barometer* falls during E., S.E., and E. winds; passes from falling to rising during S.W.; rises with W., N.W., and N.; and has its maximum rise with N.E. wind.

The *Thermometer* rises with E., S.E., and S. winds; has its maximum with S.W.; falls with W., N.W., and N.; and is at minimum at N.E.

The *elasticity of vapour* increases with E., S.E., and S. winds; has its maximum at S.W.; and diminishes during the wind's progress by W. and N.W. to N.: at N.E. it has a minimum.

Time, which has so many offices to fill in dispelling doubts and developing truths, must decide whether these results of Dove's accord with those obtained, or to be obtained, from other quarters. We may confidently look to the British Association for valuable accessions to our knowledge on this important subject; and indeed the meeting recently held at Plymouth furnished some very new and remarkable features, which will probably be given in the Report.

Scenery of a Norway Fiord.—First, the farm-house, with its surrounding buildings, its green paddock, and shining white beach, was hidden behind the projecting rocks. Then Thor islet appeared to join with the nearest shore, from which its bushes of stunted birch seemed to spring. Then, as the skiff dropped lower and lower down, the interior mountains appeared to rise above the rocks which closed in the head of the fiord, and the snowy peak of Sulitelma stood up clear amidst the pale-blue sky; the glaciers on its sides catching the sunlight on different points, and glittering so that the eye could scarcely endure to rest upon the mountain. . . . Every crevice of the rocks, even where there seemed to be no soil, was tufted with bushes, every twig of which was bursting into the greenest leaf, while here and there a clump of dark pines overhung some busy cataract, which, itself overshadowed, sent forth its little clouds of spray, dancing and glittering in the sunlight. A pair of fishing eagles were perched on a high ledge of rock, screaming to the echoes, so that the dash of the currents was lost in the din. . . . Lower down, it was scarcely less beautiful. The waters spread out again to a double width. The rocks were, or appeared to be, lower; and now and then, in some space between rock and rock, a strip of brilliant green meadow lay open to the sunshine; and there were large flocks of fieldfares, flying round and round, to exercise the newly-fledged young. There were a few habitations scattered along the margin of the fiord; and two or three boats might be seen far off, with diminitive figures of men drawing their nets. . . . Farther on, a still and somewhat dreary region, where there was no motion but that of the sea-birds, which were leading their broods down the shores of the fiords, and of the air, which appeared to quiver before the eye, from the evaporation caused by the heat of the sun.—*Miss Martineau's Feats on the Fiord.*

English Veracity.—English valour and English intelligence have done less to extend and to preserve our Oriental empire than English veracity. All that we could have gained by imitating the doublings, the evasions, the fictions, the perjuries, which have been employed against us, is as nothing when compared with what we have gained by being the one power in India on whose word reliance can be placed. No oath which superstition can devise, no hostage however precious, inspires a hundredth part of the confidence which is produced by the 'yea, yea,' and 'nay, nay,' of a British envoy. No fastness, however strong by art or nature, gives to its inmates a security like that enjoyed by the chief who, passing through the territories of powerful and deadly enemies, is armed with the British guarantee. The mightiest princes of the East can scarcely, by the offer of enormous usury, draw forth any portion of the wealth which is concealed under the hearths of their subjects. The British government offers little more than four per cent., and avarice hastens to bring forth ten millions of rupees from its most secret repositories. A hostile monarch may promise mountains of gold to our Sepoys on condition that they will desert the standard of the Company. The Company promises only a moderate pension after a long service. But every Sepoy knows that the promise of the Company will be kept; he knows that if he lives a hundred years, his rice and salt are as secure as the salary of the Governor-general; and he knows that there is not another state in India which would not, in spite of the most solemn vows, leave him to die of hunger in a ditch as soon as he had ceased to be useful. The greatest advantage which a government can possess, is to be the one trustworthy government in the midst of governments which nobody can trust.—*Edinburgh Review*, No. 142.

Manna.—At a distance of fifteen miles from, and at an elevation of about two thousand feet above the level of the sea, I first saw the tree which produces the manna. This remarkable substance is secreted by several trees, and in various countries in the East. In some parts of Persia it is believed to be an insect secretion, and is collected from a shrub called *gavan*, about two feet high, bearing a striking resemblance to the broom. In the hilly district of Looristan, as in Mesopotamia, we find it on several trees of the oak species, which there, however, are of more stunted growth than those of England. From these the manna is collected on cloths spread beneath them at night, and it then bears the form of large crystal drops of dew, such as we see on plants in England in the early part of morning. Burckhardt observes, that at Erzroum a substance resembling manna in taste and consistence distils from the tree which bears galls, and with which the inhabitants of the country form one of the principal articles of their food. These would appear to be different from the Sicilian manna used for medicinal purposes, and which botanists have considered as a vegetable gum, procured in Calabria and Sicily, and to be exuded from the *Fraxinus ornus*, or flowering ash. A supposition has, however, been started, that this might be also the production of the *aphes* tribe.—*Lieut. Wellsted's Travels in Arabia.*

Moral Influence of Foreign Commerce.—It is unquestionably true that wealth produces wants, but it is a still more important truth that wants produce wealth. Each cause acts and re-acts upon the other; but the order, both of precedence and of importance, is with the wants which stimulate to industry; and with regard to these, it appears that, instead of being always ready to second the physical powers of man, they require for their development "all appliances and means to boot." The greatest of all difficulties in converting uncivilised and thinly peopled countries into civilised and populous ones, is to inspire them with the wants best calculated to excite their exertions in the production of wealth. One of the greatest benefits which foreign commerce confers, and the reason why it has always appeared an almost necessary ingredient in the progress of wealth, is its tendency to inspire new wants, to form new tastes, and to furnish fresh motives for industry.—*Malthus's Political Economy.*

A DAY AT A TOBACCO MANUFACTORY.



[Tobacco Warehouse,—London Docks.]

IN inviting the reader to accompany us in a rapid review of the processes by which tobacco, cigars, and snuff are produced, we feel that we must not indulge in many remarks on either the use or the abuse of this plant. There is certainly a strong temptation so to do, when we are told in 'Dr. Everard, his discourse of the wonderful Effects and Operation of Tobacco,' that the use of this plant will stay hunger and thirst, cure the dropsy, ease diseases of the head, catarrhs, and headache, cure dimness of sight, deafness, redness of the face, toothache, ulcerated gums, swelling of the throat, diseases of the chest, stomach pains, surfeit, swooning, colic, diseases of the liver and of the spleen, sciatica, burns, wounds, scalds,—and likewise effect cures of all sorts of complaints in all sorts of animals. But unfortunately we have the fear of King James's 'Counterblast to Tobacco' before our eyes, as well as the anathemas of sundry other writers, a few illustrations of which will be found in two of our former Numbers (18 and 220). We must therefore be content to treat the matter in a commercial and manufacturing character; previously quoting Mr. Porter's remark, that "Tobacco is, perhaps, an object of more general use than any other production of the vegetable kingdom; and if we consider, that in no sense can it be classed among articles necessary for human subsistence, this fact is calculated to excite our surprise as well as interest. The love of tobacco is evidently an acquired taste; yet it is one so easily and universally acquired, that this weed forms a luxury which is enjoyed in common by the African negro, the unclothed and houseless wanderer of Australia, the hardy American Indian, the slothful Asiatic, and every class of people throughout the more polished countries of Europe."

It has happened, in many of our former Supplements that a notice of manufacturing processes did not involve the necessity for a description of the raw materials operated on. For instance, in an account of the operations conducted at a Brewery, we felt no necessity for beginning with the cultivation of malt and hops, the substances from which the flavour and qualities of the brewed liquor are derived. But in treating of *tobacco* the same remark cannot apply; for it is the actual leaf of the plant which is consumed, and not a particular substance extracted from it. Moreover the processes whereby the leaf is brought into a prepared state are partly performed at the American plantation whence it is derived; and these must be glanced at before the subsequent processes can be understood. Although, therefore, we have given to this paper a title in conformity with the series to which it belongs, yet the details will carry us to different quarters, instead of being confined within the limits of one establishment.

The botanical name for the tobacco plant is *Nicotiana*, given to it in honour of Jean Nicot, Lord of Villemain, who was ambassador from France to Portugal about the time when the plant was first brought to Europe. It is supposed that he introduced it first into France, as Sir Walter Raleigh did into England. There are seven species of the Nicotiana, of which only one, the *Nicotiana Tabacum*, need be particularly described. There are two varieties of this species, both

annual herbaceous plants, rising with strong erect stems to the height of from six to nine feet, their foliage being fine and handsome. When full grown the stalk near to the root frequently attains a size greater than an inch in diameter; it is surrounded by a hairy clammy substance of a greenish-yellow colour. The leaves, which are of a light green, grow alternately at intervals of two or three inches on the stalk; they are oblong and spear-shaped; those lowest on the stalk are about twenty inches long, and they decrease in size as they ascend, the top leaves being only ten inches long and five broad. The young leaves, when about six inches long, are of a deep green colour, and rather smooth; but as they approach maturity, they assume a yellowish tint, and have a rougher surface. The flowers grow in clusters from the extremities of the stalks; they are yellow externally, and of a delicate red within; the edges, when they are full blown, rather inclining to purple. These flowers are succeeded by kidney-shaped capsules of a brown colour, each one of which contains about one thousand seeds, so that the whole produce of a plant has been sometimes estimated at three hundred and fifty thousand seeds.

Such is the appearance which the plant presents, and which may perhaps be better understood by comparing this description with the wood-cut given in one of the numbers before alluded to. In Virginia (the centre of the tobacco-growing districts) the kinds of soil chosen for the cultivation of the plant are the chocolate-coloured mountain-lands, and the light black soil in the coves of mountains and the richest low grounds. The ground is prepared in two ways, one for the seed, the other for the transplanted sprouts. The seed is sown in nursery-beds, called *patches*, bordered by some plant which will arrest the progress of the ravaging fly; and is effected generally about March or April. In a month's time the young sprouts being ready for transplanting, ground is prepared for their reception. Hillocks, about eighteen inches high, are raised in parallel lines, four feet apart in one direction, and three feet in another. The sprouts, being about five inches high, are carefully taken out of the ground without injury to their tender rootlets, and conveyed to the field in a basket. One person places a sprout upon every hillock; and others, who follow him, make a hole with the finger in the centre of each hillock and deposit the tobacco-plant in an upright position, pressing the earth round the root with the hands. This is an operation of great delicacy, as the leaves are exceedingly tender at this time, and any injury sustained by them would endanger the safety of the plant.

Incessant attention is required to the young plants by weeding, earthing, stirring the soil about the roots, removing dead leaves, removing superfluous sprouts called suckers, defending the plants from grubs and worms, &c. When the plant has attained the height of about two feet, it is *topped*, that is, the upper part is cut or pinched off, leaving such a portion of the stem as contains from five to nine leaves.

When the plants are in a fit state for being cut (at which time the leaves have changed their colour to a yellowish-green, the substance of the leaf is thickened, and the web more prominent), the cutters, each of whom is furnished with a sharp strong knife, proceed regularly along the rows of plants, cutting only such as appear to be ripe, leaving the rest for future operations. This selection is necessary, because if the tobacco be cut before it is fully ripe, it will not assume a good colour, and will be liable to rot when packed in the hogsheads. The stalks are cut almost close to the ground; and such of them as are sufficiently thick are slit down the middle, in order to admit the more unobstructed access of air and the evaporation of natural moisture. The cut and divided stalks are then laid down in regular order on the ground, the extremities of the leaves all pointing in the same direction, that they may be more easily gathered. This gathering is effected after a short exposure to the sun.

The next part of the process is the *curing* of the tobacco, which is carried on in large barns, whose sides are left partially open to allow a free circulation of air; and the internal area of the building, including the roof, is occupied by horizontal poles stretching across the barn in a parallel direction, and four feet asunder. These poles are connected together by cross-pieces called tobacco-sticks, upon which the leaves are hung in order to be cured. There are several stages of these poles and sticks, one above another, a perpendicular space of four feet being left between them. The plants are carried to the curing-house as soon as the leaves have lost so much of their rigidity and brittleness as to bear handling without breaking; and the operation of hanging them is then effected, by suspending the plants upon the sticks with the points of the leaves downwards, resting them either by the stalk of the lowest leaf, or by the slit which has been made in the stem. Each stick, after being loaded with plants placed four or five inches apart, is conveyed to the stage of poles to which it belongs; and the whole area of the barn becomes thus filled with the plants, no two touching each other.

The unassisted action of the atmosphere produces, in a general way, that effect for which this process is undergone; but it is sometimes necessary to have small smothered fires of rotten wood or bark in the barn, to counteract the effects of an unfavourable state of the weather. An exposure to the air for a period of about five weeks makes the leaves of tobacco elastic and tough, and slightly covered with a glossy kind of moisture. The tobacco is then said to be *in case*, and is taken down from the sticks, in order that the stalks may be separated from the leaves. The general plan is, for a party of negroes—men, women, and children—to sit in a circle on the floor of the tobacco-house, and to pull the leaves from the stalks, handing the former to two men placed in the centre, who distribute them into separate heaps according to their qualities. The lower or ground leaves, being generally soiled and torn, are separated from the rest; while of those produced in the higher part of the stalk, some are inferior to others; the whole are therefore distributed into three heaps.

At this stage in the proceedings it is necessary to mention a difference in the form in which tobacco is imported from the plantations. Our manufacturers distinguish between 'strip' and 'leaf,' or 'strip-leaf,' and 'hand-work,' the former of which is the technical name for tobacco from which the stem of the leaf has been taken away before the latter is packed in the hogshead; whereas 'hand-work' is the name applied when the leaf is packed whole, stem and all. The stripping is effected by taking the leaf in one hand, and the extremity of its stem in the other, in such a manner as to tear them asunder in the direction of the fibre, a process requiring some degree of expertness: but whether the leaves are stripped or not, the subsequent processes are nearly the same. The leaves are tied up in small bundles by a bandage at their thicker end, a small leaf being employed for that purpose by twisting it round the others, and securing its end in a kind of knot. Each little bundle of those leaves from which the stalks have not been removed, is called a *hand*, and is, at the end where it is tied, somewhat thicker than a man's thumb, the length being from one to two feet, according to the kind of leaf. The 'strip-leaf' presents a slightly different appearance. All the bundles are then thrown together in heaps on a wooden platform, where they undergo the process of

sweating, which is in its nature a slight degree of fermentation.

Packing for shipment is the next operation. The tobacco is packed in hogsheads, and there are three reasons why it is desirable to compress it into as small a space as possible—the expense of freight is considerably lessened by lessening the bulk, the tobacco is rendered less liable to external change by the air being nearly expelled, and the reception of moisture, or of injury from without, is rendered less likely to occur. Mr. Porter states that instances have occurred where vessels have been stranded, and their cargoes of tobacco, although long covered by sea-water, have yet been found on examination to be only very partially damaged on the outside; the middle, from one or two inches inward, proving perfectly sound and dry. The casks are made perfectly dry for the reception of the tobacco, which is then deposited in them, the little bundles or *hands* being ranged one by one parallel to each other across the hogshead, the points all in the same direction. The next course or layer is reversed, the points being in the opposite direction; and any small spaces that may occur are filled up with bundles of less size, so as to bring all to a level. When the hogshead is about one-quarter filled in this way, a powerful lever-press is applied to the surface of the tobacco, so as to reduce the thickness from about twelve inches to three. The lever is kept in its position for several hours, in order that the tobacco may become so completely consolidated that it will not spring up again when the pressure is removed. Fresh portions are then laid in the hogshead, and treated in a similar manner, until the whole space is filled with a dense and compact mass of tobacco-leaves. A hogshead, forty-eight inches in length, by thirty or thirty-two in diameter, will hold one thousand pounds weight of tobacco, when compressed in this way.

We have now seen our tobacco packed in hogsheads, and shall here take leave of the plantations. Mr. Tatham, in his 'Essay on the Cultivation of Tobacco,' details the mode of examination to which the hogsheads of tobacco used to be subjected before they were allowed to be shipped from Virginia; but as many changes have taken place in the tobacco-trade during the forty years which have elapsed since Mr. Tatham wrote, and as this mode of examination is in some respects similar to that which is at present acted on in the London Docks (of which we shall presently speak), any further notice respecting the proceedings previous to shipment may be dispensed with here. Referring to Mr. Porter's valuable volume on 'Tropical Agriculture' for more minute details respecting the cultivation and curing of tobacco, we will suppose a cargo to have arrived at London, and will follow it in its subsequent career.

Among the wonders which are presented by the numerous docks at the east end of the town, few are so remarkable as the *tobacco-warehouses* at the London Docks. In Pennington Street, Ratcliffe Highway, is one of the entrances to the London Docks, very near the tobacco-warehouses. These warehouses lie at the left hand of the entrance gates, and are entered through an archway. After going a few yards through a path bounded on either side by hogsheads of tobacco, we come to a vast area of ground whose appearance is indeed bewildering. Almost as far as the eye can reach, southward and eastward, are ranges, tiers, or alleys of hogsheads, whose number is immense. Passage after passage occurs, each several hundred feet in length, and only wide enough to admit the necessary traffic; all parallel one to another, and all bordered on both sides with close and compact masses of hogsheads, generally two in height. The whole are under one roof, or rather one succession of roofs; and on the 1st of the present month (Nov., 1841) there were more than twenty thousand hogsheads, averaging twelve hundred pounds of tobacco each.

Those who are unacquainted with Customs' and Excise regulations, may perhaps not deem it immaterial to know why this enormous quantity of tobacco is kept in one place. The duty paid on every pound of tobacco is very large; but this duty is not demanded so long as the tobacco remains at the docks, or rather in the warehouses attached to the docks. As soon as it is landed at the docks from the ship and placed in the warehouses, it is considered to be *in bond*, under the care of the state, and cannot be removed thence till the duty is paid. A small *rent* is paid during the time that it remains in the warehouses. Permission is given for the transference of samples from hand to hand, under certain regulations; but the bulk of the tobacco must remain until the somewhat inordinate demands of the state are satisfied.

Scarcely any other article of consumption pays a duty so enormous when compared with the cost price, as tobacco. The average value of the tobacco brought to England, including the profits of the cultivator, the ship-owner, and all parties concerned, is about sixpence per pound; but the duty paid on it is now *three shillings and twopence* per pound, being more than six times the full value of the article itself. We have heard of an instance, at a time when the duty was somewhat higher than it is now, of tobacco worth only twopence halfpenny per pound, paying a duty of four shillings,—nineteen times the value of the commodity! The expediency or inexpediency of this impost, in a fiscal point of view, it is no part of our purpose to descant on here; but it is necessary to mention these matters in order to understand certain curious effects which result therefrom. If by any circumstance the whole or a portion of a hogshead of tobacco becomes injured, previous to its arrival at the docks, the owner would rather lose it altogether than pay the enormous duty on the damaged portion. Were the duty very small, it is possible that the damaged portion might be sold at a price which would more than cover the duty on it; but as it is, the duty is too high to permit of such a speculation. The state allows the damaged portion to be burned, without any duty having been paid on it; and we proceed to describe the arrangements whereby this is effected.

In various parts of the warehouses are large scales for weighing the hogsheads of tobacco, together with other apparatus connected with the examination of its quality. At each of these stations is a small temporary room or counting-house, for the accommodation of the supervising officer, under whose immediate inspection the examination proceeds. A hogshead of tobacco having been brought to one of these stations, the head of the hogshead is knocked out, some of the staves loosened, and by a dexterous management the hogshead is taken completely off the tobacco, leaving the latter standing upright as a brown-coloured mass of tobacco-leaves, uncommonly dense and impenetrable. As we before observed, such a mass, four feet high and less than three feet in diameter, weighs as much as a thousand pounds. By an examination of one end of this cylindrical mass, we can see the manner in which the little bunches of tobacco-leaves are ranged layer upon layer, and compressed very tightly together. The examination then proceeds, of which we can of course say very little in words, since it is only by long experience that the nature and extent of any damage which the tobacco may have received can be appreciated. Let us suppose, however, that a portion of the exterior has, through the action of sea-water, bad packing, or any other cause, became so damaged as to be not worth preservation. In such case two men, provided with long

cutting instruments, stand on opposite sides of the cylindrical mass of tobacco, and chop away all the injured part, by small bits at a time. The compression to which the tobacco has been subjected, gives such a solidity and denseness to the mass, that very powerful blows are required to chip off the damaged surface, especially at the cylindrical parts, for there the cutting is effected crosswise to the direction of the stalk and leaf. When we visited the warehouses, we saw a mass of tobacco which was being cut away to the depth of eight inches on one side; so deep had the injury extended.

When the damaged portion is all cut away, the remainder is carefully weighed, in order that the amount of duty accruing to the state may be determined; and samples are then frequently taken from the hogshead, which suffice to effect a sale between the vendor and the buyer of the hogshead of tobacco. The opened and loosened cask is next slipped over the mass of tobacco, and fastened as closely to it as is necessary, by the aid of the hoops; the head of the hogshead being also fixed in at the same time. In our frontispiece we have represented some of the operations incident to the examination of the tobacco in the warehouses; the weighing by means of large scales; the cutting away of the damaged tobacco from the surface of the mass; and the pressure of the tobacco into the hogsheads again after examination, by a powerful screw-press worked by four men situated on a platform above. A walk through the warehouses at the London Docks brings us to many different spots where these operations are going on.

But what becomes of the damaged tobacco? Is it swept away, or sold as a perquisite? Neither. Damaged though it may be, it would still be worth a price sufficient to create a branch of trade, which, supposing no duty to be paid on the damaged tobacco, would lead to various plans injurious to the revenue. It is all burned within the walls of the warehouses. Not far from the north-east corner of the warehouse a door inscribed with the words "To the Kiln" points out the spot where this burning is effected. The kiln is a building of a form somewhat circular; so dark that its interior



arrangements can with difficulty be seen until the eyes are accustomed to the dusky light; and provided with a furnace and several troughs Here the superintendent points out to a visitor the 'Queen's tobacco-pipe'—a jocular name applied to the chimney and the furnace in which the damaged tobacco is consumed. The tobacco is brought to the kiln, placed on the floor, and thence thrown into the furnace by an open door, and burned. As the smoke arising from this combustion is of a deleterious character, the chimney of the kiln is carried to a considerable height in order to convey the smoke to a sufficient height for avoiding unwholesome effects. The greater part of the tobacco is thus consumed; but an ash remains, which is from time to time drawn out of the furnace, and thrown into the bins or troughs at the side. These ashes are by no means valueless; they are sold as manure for which they possess good qualities; one ton of ashes being used to manure four acres of ground. The ashes also constitute a useful kind of tooth-powder.

Thus much for the operations which the tobacco undergoes before it comes into the hands of those who are termed "snuff and tobacco manufacturers." It will be seen by these details why it is that a notice of the processes carried on in any one establishment would necessarily fail in conveying an accurate idea of the routine by which the simple plant is brought into a state fit for use. The tobacco is in fact half-manufactured before it leaves the warehouses.

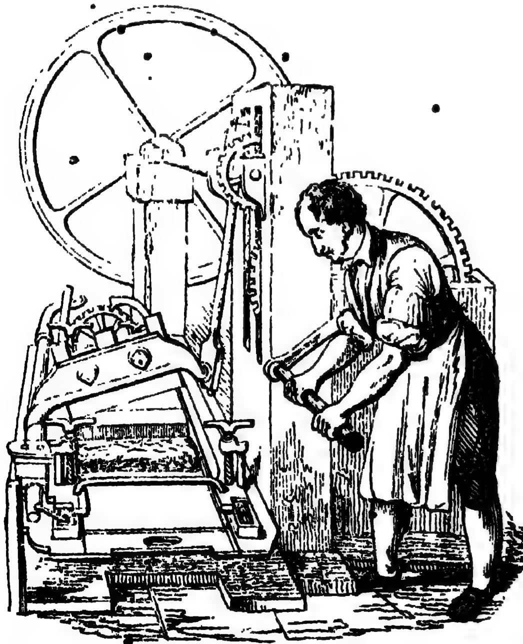
The leaf being brought to the manufacturer in hogsheads, he proceeds to give it one of the three forms in which it is used, *i.e.* tobacco, cigars, and snuff. Most persons are probably aware of the main points of difference between these three forms of the plant; but as all are not so, we may shortly state that common smoking *tobacco* is the leaf, generally divested of the stalk, and also generally cut up into shreds or filaments; *cigars* are bundles of the tobacco-leaf, divested of the stalk, and wrapped up into the close and well known form which those articles present; *snuff* is formed partly of the stalks of the leaves, and partly of the leaves themselves, cut and ground into the state of powder. These are the distinctive qualities in which the three *commercial* forms of the plant differ one from another; but each one of the three has many varieties, arising partly from differences in the quality of the original leaf, partly from the manner in which the leaf is cut, and partly also from the processes preparatory or subsequent to the cutting. It may likewise be here remarked that the manufacture of the leaf and stalk into the three forms in which the plant is used generally devolves upon three classes of persons. The same man who makes cigars does not generally prepare the tobacco which is smoked in pipes, while the grinding of snuff is a different occupation from either. The processes, too, are conducted in a somewhat different manner in different houses. We shall therefore state in a simple form the general nature of the processes; acknowledging the kindness of Messrs. Rogers and Son of Oxford Street, and Mr. Pell of the Borough, in permitting us to view the processes of the tobacco manufacture.

A hogshead of tobacco being opened, and ready for preparation, the plant is dug out piecemeal by the aid of an iron instrument. The bundles of leaves are, as we before observed, compressed so powerfully together, that they become almost one mass; and indeed without the aid of moisture it would be almost impossible to separate them. The heaps or pieces are sprinkled with water, a process technically termed 'liquoring;' by which the bunches of leaves may be separated one from another. If the tobacco is in the form called 'strip-leaf,' in which the stalk has been removed before the leaves were packed in the hogshead, each separate leaf or half-leaf becomes loosened from the others by the operation of liquoring; but if it be 'hand-work,' *i.e.* retaining the stalks, and bound up in bundles called 'hands,' the liquoring in the first place loosens the bundles one from another, and these being untied, the leaves themselves are separated.

The 'hand-work' must become 'strip-leaf' before the tobacco is in a fit state for use, or in other words,

the stalk must be taken out, either at the plantations where the plant is grown, or in England after importation. The stripping or taking off of the stalk is effected generally by women or boys. The leaf is folded along the middle, and by means of a small instrument, and a dexterous manœuvre acquired only by practice, the stalk is stripped from the leaf, and laid on one side,—the leaf being laid in another place by itself. One particular kind of tobacco, however, known to consumers by the fanciful name of 'bird's-eye,' contains a portion of stalk as well as leaf. To produce this form of the 'Virginian weed,' the various processes are performed on the leaf without the previous extraction of the stalk. The action of the cutting-machine, presently to be described, produces a large number of round, light, and exceedingly thin sections or slices of stalk, which become mixed up with the fine thread-like fibres into which the leaf itself is cut, and thus produce an appearance which has given rise to the name of this particular form of the plant. Let not the reader, curious in the philosophy of tobacco, hope however to meet with the brilliance of a bird's eye in these slices of stalk. He will meet with no such thing. The workers in polished woods have also appropriated this simile, by giving the name of 'bird's-eye maple' to a spotted variety of that wood. The birds have no reason to be proud of the compliment in either case.

The cutting of the leaves into those fine shreds which form the greater part of smoking-tobacco is not effected leaf by leaf; but a large number of leaves are pressed together in the form of a cake, and then cut. The leaves, after having been separated one from another, and stripped of their stalks, are moistened to a certain degree, either by sprinkling or by immersion in a liquid prepared for that purpose. This process not only gives to the leaves a degree of moisture which enables them to cake well together, but also has an influence on their subsequent flavour, and is therefore of considerable importance in the manufacture.



The cutting-machine by which the thread-like fibres are produced is represented in the annexed cut, and the mode by which the tobacco is brought into a form fit for placing in the machine is as follows:—On one side of the tobacco manufactory is a powerful press, or a series of presses, capable of operating on a surface fourteen or sixteen inches square. The leaves are taken up out of a trough, in a damp state, and laid in a 'mortar-press,' layer after layer being piled up to a certain height. The whole are then subjected to pressure, by means of an iron plate which descends into the press upon the tobacco, and is connected above with the screw of the press. The tobacco is then removed from the 'mortar-press' to the 'standing-press,' where it is pressed into a mass one-third of the thickness which it originally presented. The mass of leaves is allowed to remain in the press several hours, in order that it should not spring up or loosen when the pressure is removed.

The cake, pressed as hard as a board, but clammy and wet from the previous sprinkling of the leaves, is then laid in the bed of the cutting-engine, in order to be cut into shreds. These engines, like most other engines used in manufactures, have undergone considerable changes as improvements became introduced. Originally tobacco used to be cut by means of a long knife worked by hand. After a time a hand-engine was used, in which the workmen had nothing to do but to turn a winch-handle, the arrangement of the machine serving both to cut the tobacco and to shift the cake along as it became cut. Then horses were used to turn the machine, instead of applying human labour. Lastly, the power of steam was applied, by which the whole work was brought within the scope of this moving-power; the attendance of men being required only to place the cake in the engine, to attend it while at work, and to remove the tobacco when cut.

But the hand-engine, the horse-engine, and the steam cutting-engine, however different in their moving-power, all cut the tobacco nearly in the same manner. The cake is laid on an iron bed, which is susceptible of a slow progressive motion by means of a screw passing beneath it. This screw is connected at one end with a cog-wheel, in such a manner that while the machine is working, the bed on which the tobacco is laid is urged slowly forward. Another part of the mechanism gives motion to a sharp blade, rather longer than the width of the cake. This knife or blade has a reciprocating vertical motion, or rather, a motion somewhat similar to that of a pair of nutcrackers, inasmuch as there is a hinge or fulcrum at one end.

The cake being placed on the bed of the engine, confined in a kind of case or box, the motive-power is applied, and the process of cutting is immediately commenced. The cake is about two inches thick, and each action of the cutting-blade slices off a thin film from one end of the cake. As the cake itself is composed of a very large number of separate leaves of tobacco, it follows that each film or shaving taken from the edge, generally at right angles to the surface of the leaves, must be formed of separate pieces, in no case larger than filaments or fibres. The thickness of these fibres is regulated in a very ingenious manner. Immediately after the blade or knife has made one cut, the cake is moved forward a minute distance, so that the next following cut of the blade may be distant some small space from the former. It depends upon the number of cogs in the wheel at the end of the under-lying screw, whether this distance, and consequently the diameter of the fibres of tobacco, shall be greater or smaller. For one kind of tobacco the cog-wheel contains about thirty cogs, for another about thirty-six; and these produce fibres whose diameters differ in the ratio of thirty-six to thirty, or six to five. To explain minutely how this difference is brought

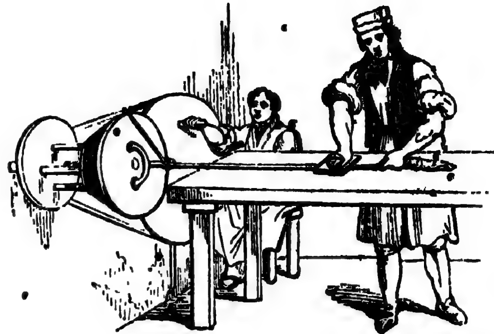
about is no easy matter. Those who are acquainted with the action of wheel-work will readily understand the nature of this effect; while those who are not, could scarcely understand it from mere description.

When the cake is entirely cut up into shreds, or when, as it is technically termed, the 'box is out,' the engine is stopped, and the cut tobacco, in a clotted and damp state, is taken up and put into a trough or case. A new cake is then adjusted to the bed of the engine, and the operations proceed as before. At Messrs. Rogers's manufactory there are two cutting-engines ranged side by side, the beds being at a height of about two feet from the floor, and both worked by one steam-engine, through the agency of wheels and bands of the usual kinds. In our cut we have, however, represented one of the hand-engines, worked by means of a winch: the principle of the cutting part is the same as in the other, and more easily understood when divested of the mechanism connected with the steam-engine.

The various kinds of tobacco ordinarily used for smoking owe their different qualities to many different circumstances; some depending on the kind of leaf, some on the colour of the leaf, some on the retention of the stalk, some on the extent to which the leaf is 'liquored,' and some on the relative fineness of the fibres into which it is cut. 'Bird's-eye' is, as we have before stated, produced by cutting up the stalk together with the leaf, a plan which is, we believe, never adopted with any other form of tobacco. That kind of tobacco which is called 'returns' is made of the lightest-coloured leaf, selected from the hogshead; and this light colour is preserved by caution in the subsequent arrangements. A considerable quantity of water in the process of 'liquoring' has a tendency to darken the colour of the leaf, as has likewise an excessive amount of pressure when in the form of a cake; by using a small amount both of moisture and of pressure, therefore, lightness of the colour of 'returns' is preserved. The very strong kind of tobacco called 'shag,' which is used both for chewing and smoking, owes its quality to different circumstances, the first of which is the choice of the darkest-coloured leaves in the hogshead. In the subsequent processes the tobacco is well 'liquored,' and screwed down in the press with great force. This kind of tobacco is subdivided into two sorts, 'fine' and 'common,' the chief difference between which is in the diameter of the fibres into which the leaves are cut, the 'fine' being cut by the engine when the bed is pushed forward by a wheel having more cogs than for cutting the 'common' kind.

Many of the names by which tobacco is known were given from the names of the places whence it was brought, and from other circumstances having but little reference to the quality of the tobacco. 'Oronoco,' a name given to one kind of tobacco, was probably derived from the South American river of that name. 'Kanaster' or 'Canaster' was originally the name given in America to baskets of rushes or cane, in which they put the tobacco sent to Europe; and hence the designation of 'Kanaster tobacco' was given to the leaves imported in those baskets. At present the two kinds known by these respective names are manufactured from the best leaf, generally from Havannah. Oronoko is cut finely, somewhat similar to fine 'shag,' but Kanaster is much coarser. This forms the chief difference between the two kinds, the quality and preparation of the leaves being in other respects about equal.

We must not omit to mention a kind of tobacco which glories in the name of 'pig-tail,' and which perhaps is about equally well named with 'bird's-eye.' Pig-tail tobacco is a rope or cord, about equal in diameter to the thicker end of a common tobacco-pipe, and of as great a length as the manufacturer may choose to make it. The manufacture of this article requires the simultaneous aid of a man and two boys



The bench employed is several yards in length, and at one end of it is a kind of spinning-wheel, which is kept in rotation by one of the boys. The other boy has spread out before him a supply of leaves, deprived of the stalks, and in a damp state. He opens the leaves one by one, and lays them down on the bench, end to end. The man follows him, and rolls up these successive leaves into the form of a cord, by a very peculiar motion of both his hands. The length of 'tail' which happens to have been made at any one moment is kept constantly rotating by the action of the wheel, and the man, adding leaf after leaf to it with the left hand, presses and rolls it by means of a palm of leather or wood held in his right. The manœuvre is so quick and so dexterous, that a spectator can hardly see where or how the leaf becomes absorbed into the 'tail,' and made part of its substance: it is one of those operations of which manufactures present such numerous examples, in which considerable skill and 'knack' are required for an apparently simple operation. As the tobacco is spun, it becomes wound off at the same time on a frame connected with the spinning-wheel. The pig-tail is afterwards wound or twisted up into a hard close ball, and has a black colour given to it by steeping in tobacco-water.

Of all the various ways in which tobacco is used in England, none has made a more striking advance within the last few years than *cigars*. However much this form of the plant may be used in Spain and in the tropical regions of America, it was till a few years ago scarcely known in England, except to the higher class of smokers; but now every stripling who is just shooting up into manhood thinks a cigar indispensable, as a symbol whereby the world may know that he has at length become a man; and lest this important piece of information should not be diffused widely enough by his remaining within doors, he exercises his new vocation in the open street.

The reader, by referring to one of our back numbers, will find a notice of the large extent to which cigar-making is carried on at Seville; but be it where it may, the process is pretty nearly the same. In the next two cuts we have represented a man preparing the leaves for the cigar-maker, and another making the cigars. The unstripped leaves, *i.e.* the leaves from which the stalks have not yet been removed, are placed in front of the first-mentioned workman; he takes up the leaves one by one, folds them, strips off the stalk by a quick and dexterous movement, throws the stalks on his right hand, and lays the stripped leaves smoothly on his left. He is on the left side of the cigar-maker, to whom he hands up the leaves as fast as they are wanted.

The cigar-maker is seated on a low stool in front or





a low workbench, which has raised ledges on three of its sides, but is open at the side next the workman. He takes a leaf of tobacco, spreads it out smoothly before him on the bench, and cuts it to a form somewhat like that of one of the gores or stripes of a balloon. He then takes up a few fragments of tobacco-leaf, consisting of various small cuttings, lays them on the spread leaf, and rolls them up into a form nearly resembling that of a cigar. He next places this cigar against a gauge or guide, formed of a piece of iron, and cuts it to a given length. Finally, he lays a narrow strip of leaf on the bench, and rolls the cigar spirally in it, twisting one end to prevent the leaf from becoming loosened. All this is done with great rapidity, a few seconds only being required for the making of one cigar. When the cigars are made, they are dried in different ways, according to the time when they are wanted for sale. The rate of duty on foreign cigars, as well as on all kinds of tobacco manufactured abroad, is so enormous (nine shillings per pound—probably sixteen or eighteen times the real value of the leaf itself), that the quantity imported from abroad is very small compared with that of tobacco in the leaf. Only one hundred and fifty thousand pounds weight were entered for home consumption two or three years ago, although the unmanufactured tobacco amounted to sixteen millions of pounds. This rate of duty has therefore given rise to an extensive home-manufacture of cigars.

We have next to direct our attention to the third form in which the plant is used, viz. *snuff*. This article has been the theme of as many grave accusations as tobacco in the form for smoking; but the grave accusations have been as fruitless in the one case as the other. Some have treated the matter in a medical point of view; others, in reference to the welfare of the purse; while Lord Stanhope has taken the following curious statistical estimate of the matter:—"Every professed, inveterate, and incurable snuff-taker, at a moderate computation, takes one pinch in ten minutes. Every pinch, with the agreeable ceremony of blowing and wiping the nose, and other incidental circumstances, consumes a minute and a half. One minute and a half out of every ten, allowing sixteen hours to a snuff-taking day, amounts to two hours and twenty-four minutes out of every natural day, or one day out of every ten. One day out of every ten amounts to thirty-six days and a half in a year. Hence, if we suppose the practice to be persisted in for forty years, two entire years of the snuff-taker's life will be dedicated to tickling his nose, and two more to blowing it. The expense of snuff, snuff-boxes, and handkerchiefs will be the subject of a second essay, in which it will appear that this luxury encroaches as much on the income of the snuff-taker as it does on his time; and that by a proper application of the time and money thus lost to the public, a fund might be constituted for the discharge of the national debt." We cannot enter upon this "second essay," nor upon the patriotic plan alluded to in the last sentence, but must at once proceed to the only part of the subject which this paper relates to, viz. the commercial and manufacturing arrangements by which these luxuries are produced.

Snuff is made from stalks alone, from leaf alone, or from leaf mixed with stalk,—circumstances which render the whole of the imported leaf valuable: in every case a greater amount of care is required in the preparation of snuff than of tobacco. The various qualities of snuff are due to a great variety of circumstances, principally under the control of the manufacturer. The purest kind of snuff is that which goes by the name of 'Scotch,' which is either made entirely of stalks, or of stalks mixed with a small proportion of leaf; in either case there is very little 'liquoring' applied to the tobacco, as that would darken the colour of the snuff. There are many kinds of snuff called 'high-dried,' such as 'Welsh' and 'Lundyfoot' (the latter being named after a celebrated maker). These owe their qualities chiefly to the circumstance that they are dried so much as to acquire a slight flavour of scorching.

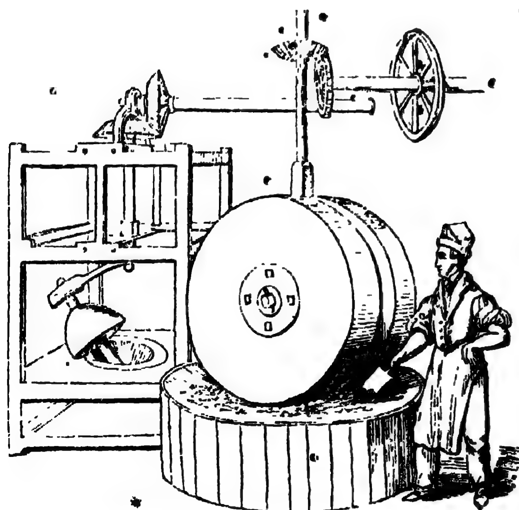
The snuffs called 'rappee,' of which there are two kinds, 'brown' and 'black,' are made chiefly from leaf, to which is added the 'smalls,' or broken fibres of tobacco, which are too small to be smoked conveniently in a pipe. The dark colour is principally produced by wetting the powdered tobacco in a bin or box, and allowing it to remain for a considerable time, turned occasionally with a shovel; during which time it undergoes a slight degree of fermentation, which darkens the colour.

The original quality of the leaf is as much attended to as the subsequent processes. Scotch snuff is made principally from the stalks of light dry leaves; whereas 'rappee' and the darker snuffs are made from the darker and ranker leaves. A process of *scenting*, too, has great influence on the flavour of the snuff, since the manufacturer can introduce any kind of scent which he thinks may please his customers. Thus, 'Prince's mixture,' among the low-priced snuffs, and the interminable varieties of 'fancy snuffs,' owe no small part of their flavour to the kinds

of scent introduced. Other kinds, however, such as 'high-dried,' 'Welsh,' 'Lundyfoot,' &c., are chiefly dependent on the peculiar circumstances under which they are dried. In relation to the last-named snuff, Mr. Barlow states—"The celebrated Lundyfoot snuff derives its particular flavour chiefly from having the fermentation carried to a very high pitch before the batch is turned; and it is said that its first discovery was owing to the neglect of the man attending upon the batches, and who, by getting drunk, made his master's fortune. Another story also prevails with respect to the discovery of this snuff, so much esteemed by inveterate snuff-takers, which attributes it to an accidental fire, which, by scorching some hogsheads of tobacco, gave them a peculiar flavour when manufactured. This story is, however, evidently without foundation, as the snuff manufactured by Lundyfoot still continues to retain a peculiar flavour which cannot be imitated by other manufacturers; a circumstance which is not likely to continue if the effect imply depended upon the degree of drying."

It is a curious circumstance, and one little suspected by those who are in the habit of using snuff, that almost the whole of that which is sold in the metropolis, either wholesale or retail, is ground in or near the town of Mitcham in Surrey; owing to the excellent water-power afforded by the river Wandle, which passes through the town. Many manufactories on the Wandle derive their mechanical power from water-wheels, which were almost invaluable before the use of steam became prevalent. The advantage of employing a particular class of persons for grinding snuffs, instead of each manufacturer grinding his own, is easily understood. Few manufacturers dispose of enough snuff to keep a grinding-mill constantly employed; and under such circumstances it is generally cheaper to obtain the aid of another person whose premises and arrangements are devoted wholly to that occupation. Such is the case with regard to the snuff-mills on the Wandle. There are several of these establishments to which the London manufacturers send their snuff in a certain stage of preparation.

The mills are provided with two different kinds of grinding-machines, such as are represented on a



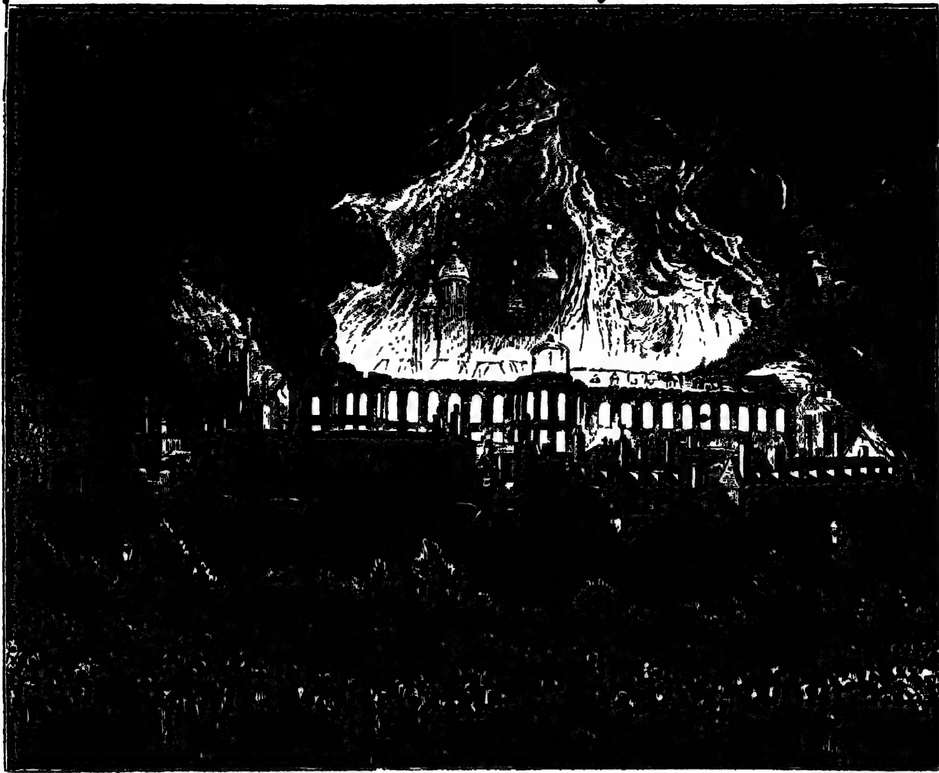
small scale in the annexed cut. In one of them a pair of cylindrical stones, several feet in diameter and a foot or more in thickness, are set up on edge on a slab or bed beneath, and have then a two-fold motion given to them, resembling that of the wheel of a carriage which is going round in a small circle. By means of a horizontal axis passing through the centre of the stones, the stones wheel along the surface of the bed; and by giving to the axis itself a motion round another but vertical axis, the stones are carried round in a small circle. The snuff to be ground is laid on the bed or support, and the broad edge of the heavy stone passes repeatedly over it, by which the particles are reduced to powder.

In the other form of grinding-mill, the snuff is put into a kind of cell or mortar, in which it is ground by a pestle moved in a singular manner. The pestle is connected with a set of jointed arms or levers, so adjusted one to another as to give to the pestle a motion best calculated to effect the grinding of the snuff. Every establishment for grinding snuff contains a considerable number of both these machines; since some kinds of snuff are best ground by the one, and others by the other.

Beyond the grinding, and a preparatory drying, nothing is done to the snuff at the snuff-mills. The proprietor brings it to a certain stage of preparation before it is sent to the mill, and in most cases passes it through some finishing operations after it is brought from the mill. The high-dried snuffs, such as Lundyfoot, Welsh, Scotch, &c., are sometimes made from stalks, which, before grinding, are cut into fine shreds; but very often the entire stalk is dried so intensely that it may easily be ground to powder without the preparatory shredding. In such case the lightest and finest stalks are presented.

Many of the London manufacturers have small mills on their own establishments, for grinding small quantities of snuff, or for passing through any particular process the various kinds of fancy snuffs; but we are not aware that there is a single establishment in London where the main bulk of the snuff is ground.

The Excise regulations relating to tobacco, which were formerly very burdensome, are now much less vexatious. Indeed, so far as regards the mode of collecting, there is probably no other instance in which a revenue of three millions sterling per annum from one article is obtained with less personal annoyance. Here is one of the old laws by which the operations of the manufacturer used to be controlled:—"Every manufacturer shall give notice in writing to the officers (if in London six, in cities and market-towns twelve, and elsewhere twenty-four hours) before he shall begin to strip, spin, or press any tobacco for cutting; or make any tobacco into carrots, or flatten any stalks for Spanish; and shall express therein the weight of each article, and the time he intends to begin. And the officer shall attend accordingly, and he shall begin within one hour of the time so mentioned, and shall proceed without delay." And here is another:—"Every manufacturer may have a store-room for keeping dried Scotch snuff; but the same shall have but one door or opening, which shall be locked up, scaled, and secured by the officer; wherein may be deposited Scotch snuff returned directly from the mill for six months, without being taken as part of the stock. And when the same is intended to be taken out of such room, notice shall be given to the officer, who shall attend and open such room; and such snuff shall be taken out in his presence." These embarrassing regulations are no longer acted on; although similar plans still disgrace the modes of collecting the duty in the glass-manufacture, the soap-manufacture, and many others.



[The Great Storehouse, as it appeared on Fire on the night of the 30th of October, 1841.]

THE TOWER OF LONDON.

We extract the following from the periodical work entitled 'London,' in which it is proposed to give a series of papers on the Tower and its associations:—

"The great fire at the Tower on the 30th of October, 1841, has fixed the public attention, with an earnestness previously unknown, on this most interesting of all the monuments of our ancient history. It is not to meet the demand of a mere temporary excitement that we intend devoting a Series of Numbers to a view of the Tower under its most important aspects. Sooner or later we should have taken up this large subject, and have exhausted it, as far as was compatible with the plan of our work. But the resent destruction of 'the Great Storehouse'—which is sometimes also named 'the Small-Arms Armoury'—not only forces upon our attention the present state of the multifarous buildings which form what is called 'the Tower;' but the historical associations of those buildings lead us to consider what the Tower ought to be as a great national monument. In detailing to the reader the course which we intend to purse in the treatment of this subject, we shall also very slightly indicate our general views of what a government that rightly estimates the value of patriotic feelings ought to do in reference to any plan for the repair of the recent damage.

"The brief history which we have given of the progressive increase of the Tower has purposely avoided any notice of the surpassing historical associations which belong to this fortress. We reserve those for two or three successive papers. They will group themselves somewhat as follows:—We shall first regard the Tower as the ancient palace of the English kings. All the fortress buildings which remain once constituted a portion of that palace; for in the days of arbitrary power the notions of a palace and a prison were by no means dissociated. But the White Tower, especially, was a chief part of the palace, with its hall, its chapel, its council chamber. Here some of the greatest events in English history took place. Here Richard II. resigned his crown to Bolingbroke; the protector Gloucester bared his arm before the assembled council, and, accusing Hastings of sorcery, sent him within the hour to the block in the adjoining court. What is the White Tower now? Its walls remain; but modern doors and windows have taken the place of the old Gothic openings; and within, the fine ancient apartments are divided and subdivided into various offices. The chapel, one of the most striking remains of our early architecture, is fitted up as a depository of Records;—and the vaulted rooms upon the basement are filled with military stores and gunpowder. To none of these places are the public admitted; nor, if they were, could they form any notion of the ancient uses of the building. It would be a wise thing in the government to sweep away all that encumbers and destroys the interior of this edifice; and to restore it as far as possible to the condition in which it was at some given period of our history—in the time of Richard II. for example. And for what? it will be said,—to make a show-place? Unquestionably. There are buildings, or there ought to be, where Records could be better preserved, because more conveniently: but there is no building which can be shown to the people as so complete a monument of the feudal times; or which could be so easily restored to its former conditions. Let the people here see, as far as possible, what royal state was, three, four, or five centuries ago. Let one room be fitted up as in the days of Henry III.; another as in the times of the Wars of the Roses; and another as in the reigns of Mary and Elizabeth. During the last ten or fifteen years all the ancient armour of the Tower has been beautifully arranged, in a chronological series; and the visitor can understand better

than by the best description what the warfare of our ancestors was,—and what were the appliances of their mimic wars of tilts and tournaments. In the same way let them be instructed in the domestic history of their country, by walking under the same roof beneath which their old kings sate, surrounded with the same rude magnificence, the same mixture of grandeur and meanness, arms on the walls and dirty rushes on the floor. We would go beyond the restoration of the White Tower; and ask that 'the Queen's Garden' of 1599 should be restored; and that the ancient courts, which have been destroyed that paltry houses may occupy their site, should again be formed, to shew how power was obliged to hem itself round with defences, and how its commonest recreations were mingled with fears and jealousies which could never be removed till constitutional government was firmly established. In connection with the palatial character of the Tower, the exhibition of the Crown Jewels should be regarded. They were formerly kept in a place more immediately appurtenant to the White Tower. Their history is united in the mind of every child in the kingdom with the daring attempt of Colonel Blood to steal them, in the days of Charles II. How easy would it be to restore the Jewel Office exactly to the condition in which it was in those days! Again, the Mint formed a part of the Tower as the chief ancient seat of royalty. The actual coining of money has been very properly removed to a more convenient building. But let one of the ancient towers be fitted up for the display of the former rude implements in the manufacture of money and for the exhibition of the British coins and medals, from the Saxon penny to the coronation medal of Victoria. The 'lions' departed from the Tower to die of the damps of the Zoological Gardens. But they were a part of the ancient regal magnificence, and we think they ought not to have been removed. We could wish again to see the living emblem of England in his ancient cell. The glory of the place seemed to us to have departed when the last old king of beasts left his massy stone dwelling in the Lion Tower, where his predecessors had dwelt for centuries with the kings of men—to take up with a wooden box, and to be fed by subscription.

"But there are more solemn lessons to be learnt at the Tower by people who go there for real instruction. It was the great State Prison of England; and here the most illustrious victims in the world have suffered and perished. With the exception of a room or two in what is now called 'Queen Elizabeth's Armoury,' the public see none of the interesting remains which are full to overflowing with these sublime associations. The room whose walls are covered with the pathetic inscriptions of those who here waited for death—where we may actually look upon the lines which the delicate fingers of Lady Jane Grey traced in her solitude—is a mess-room for the officers of the garrison. The Beauchamp Tower, a most important prison, is inaccessible. Again, the chapel or church of St. Peter—the little building to the west of the large storehouse recently destroyed—is the burial place of the most renowned victims of their own ambition, the jealousies of power, or the sad necessities of state, that have fallen beneath the axe, from the days of 'poor Edward Bohun' to those of Lord Lovat. This chapel—perhaps, altogether, the place in all England most interesting in its associations—is fitted up with modern pews; and not a stone is there to tell who lies in that blood-tempered dust. What a noble work it were for a great nation to consecrate this chapel anew as a Temple of Toleration; to erect monuments here to every illustrious sufferer, whether Protestant or Catholic, Republican or Jacobite. During the contests in which they perished was slowly built up the fabric of our liberties, and; like the old bulwarks we have described, it is not now to be shaken by any common storm. The more the people are conversant with our national antiquities, and have an abiding historical knowledge impressed upon them by associations which all can understand, the more will the foundations of this fabric be strengthened.

"The last point of view in which we purpose to regard the Tower is that of an Arsenal. A great deal has been very wisely done of late years to display and classify the many curious relics and spoils of war of the English army, from the days of Cressy to those of Waterloo. Some valuable things have been lost in the recent fire; but many of the most valuable have been preserved. We trust that, in any plans for repairing the destruction, the notion of making the Tower a depository for arms and stores for present use will be abandoned; but that in a few years may be here found the finest ancient Armoury in Europe."

LIVERIES.

The term livery, as applied to the dress of servants, is of French origin, being derived from the verb *livrer*, to deliver. At the plenary courts of France, under the first two races of monarchs, the king was accustomed to deliver to the servants of the royal family particular clothes which were called "livrées,' because given at the king's expense. The nobility and gentry in like manner presented to their dependents liveries, which term sometimes denoted both food and clothes, but usually clothes alone, or even only a particular mark or badge for the clothes. Various colours were adopted by different masters to distinguish each other's servants. Menestrier, in his account of Carousals, details at length the mixture of colours found in the liveries. By the National Constituent Assembly liveries were abolished in France as signs of servitude, but they were soon after reintroduced in that country. The use of liveries has long been known in England, but the application of the term has not always been confined to menials: thus Chaucer, in the Prologue to the 'Canterbury Tales,' says:

> "An haberdasher and a carpenter,
> A webbe, a deyer, and a tapiser,
> Were all yclothed in a *liverie*
> Of a solemyne and grete fraternite."

Indeed the term by a secondary application is frequently used by the poets to signify to clothe or deck. Mr. Douce, in reference to the passage in the 'Taming of the Shrew,'—"Let their heads be sleekly comb'd, their *blue-coats* brush'd," makes some interesting remarks on the use of liveries in England:—

"The practice of giving liveries to menial servants has not originated in modern times. It is mentioned in some of the statutes of the reign of Richard II. In that of Edward IV. the terms livery and badge seem to have been synonymous. The badge consisted of the master's device, crest, or arms, on a separate piece of cloth, or sometimes silver, in the form of a shield, fastened on the left sleeve. In Queen Elizabeth's time the nobility gave silver badges, as appears from Hentzner's 'Travels.' This foolish extravagance was not confined to persons of high rank. Fynes Morison, speaking of the English apparel, informs us that 'the servants of *gentlemen* were wont to wear *blew coates*, with their master's badges of silver on the left sleeve, but now they most commonly wear coats guarded with lace, all the servants of one family wearing the same livery for colour and ornament.' We are therefore to suppose that the sleeve-badge was left off in the reign of James I.

"The custom of clothing persons in liveries was not confined to menial servants. Another class of men,

called *retainers*, who appear to have been of no small importance among our ancestors, were habited in a similar manner. They were a sort of servants, not residing in the master's house like the menials, but attending occasionally for the purposes of ostentation, and *retained* by the annual donation of a livery, consisting of a hat or hood, a badge, and a suit of clothes. As they were frequently kept for the purpose of maintaining quarrels, and committing other excesses, it became necessary to impose heavy penalties on the offenders, both masters and retainers."

The retainers were not always of lowly condition; for Jervis Markham, as quoted by Douce, speaks of the squire's son wearing the knight's livery; and adds, "Yea, I know at this day, gentlemen, younger brothers, that wear their elder brother's blew coate and badge, attending him with as reverent regard and dutiful obedience as if he were their prince or sovereign."

The old ballad 'Time's Alteration,' thus alludes to the coats and badges:—

"The nobles of our land
 Were much delighted then,
To have at their command
 A crew of lusty men;
Which by their coats were known,
 Of tawny, red, or blue,
With crests on their sleeves shown,
 When this old cap was new."

Several of the more powerful of the nobility had so great a number of retainers constantly at their command, that they were often enabled to set the law at defiance, and become formidable even to their sovereigns. Several statutes were passed in the reigns of Richard II., Henry IV., and Henry VI., in order to limit the numbers and restrain the violence of these retainers, but with little or no effect. That politic prince Henry VII., opposed a rigorous hand to this evil, and even severely fined the Earl of Derby, his father-in-law, for infringing the laws he had laid down upon this subject. Henry VIII., fearing less the power of the nobility, and fond of pomp and show, permitted these large retinues again to be assembled. Their frequent quarrels and licentious excesses, however, led to the plan of permitting only certain licensed persons to maintain retainers. Strype blames Queen Mary for a too great laxity in this respect.

"She granted," he says, "more by half in her short five years than her sister and successor in thirteen. For in all that time there were but fifteen granted, whereas Queen Mary had granted thirty-nine. She was more liberal also in yielding to the number of retainers to each person, which sometimes amounted to two hundred. Whereas Queen Elizabeth never granted above one hundred to any person of the greatest quality, and that rarely too. But Bishop Gardiner began that ill example, who retained two hundred men, whereas under Elizabeth the Duke of Norfolk retained but one hundred, and Parker, Archbishop of Canterbury, but forty."

Stowe, in his 'Survey of London,' gives several instances of the excess to which the practice of wearing liveries had extended a little before and within his own memory. Neville, earl of Warwick, came into town in the reign of Edward IV. with six hundred men, all in red jackets, having his cognizance, the ragged staff, embroidered before and behind. The Bishop of Ely (1532) kept one hundred servants, to each of whom he gave for a winter gown or livery four yards of broadcloth, and for his summer coat three yards and a half. The Earl of Derby had three hundred men who wore his livery. Lord Chancellor Audley, in the reign of Henry VIII., gave to his gentlemen who rode before him coats guarded with velvet, and chains of gold; and to his yeomen who rode after him he gave similar livery, not guarded. Paulet, marquis of Winchester, gave his gentlemen and yeomen a livery of "Reading tawny." The livery of Cromwell, earl of Essex, was a grey marble cloth, that of the gentlemen guarded with velvet, of the yeoman with the same cloth; "yet their skirts large enough for their friends to sit upon." The Earl of Oxford came to his house at London Stone, in the city with fourscore gentlemen before him, in liveries of Reading tawny, and chains of gold about their necks, and one hundred tall yeomen behind him, in the like livery, without chains, but all having his cognizance of the blue boar embroidered on the left shoulder.

"The badge occurs," says Douce, "in all the old representations of posts or messengers. On the latter of these characters it may be seen in the fifty second plate of Strutt's work upon the dress of the English, where, as in the most ancient instances, the badge is affixed to the girdle; but it is often seen on the shoulder, and even on the hat or cap. These figures extend as far back as the thirteenth century; and many old German engravings exhibit both the characters with a badge, that has sometimes the device or arms of the town to which the post belongs. He has generally a spear in his hand, not only for personal security, but for repelling any nuisance that may impede his progress. Among ourselves the remains of the ancient badge are still preserved in the dresses of porters, firemen, and watermen, and perhaps in the shoulder-knots of footmen."

Utility of the Rook.—Although at certain seasons of the year rooks do considerable mischief, yet they make ample compensation in the end by destroying the grubs of the cockchaffer and other underground-feeding insects, which if left to themselves would utterly destroy the crops which the rooks only partially injure. Mr. Yarrell, in his 'History of British Birds,' says:—"On some very large farms in Devonshire the proprietors determined, a few summers ago, to try the result of offering a great reward for the heads of rooks; but the issue proved destructive to the farms, for nearly the whole of the crops failed for three successive years, and they have since been forced to import rooks and other birds to re stock their farms with. A similar experiment was made a few years ago in a northern county, particularly in reference to rooks, but with no better success; the farmers were obliged to reinstate the rooks to save their crops."

Improvers of Agriculture.—It is curious that many to whom improvements in agriculture are traced were not professional farmers, but men engaged in other pursuits, who, with cultivated minds, turned their attention also to the subject. Thus, the first English Treatise on Husbandry was written by Sir A. Fitzherbert, Judge of the Common Pleas in 1534, and from this, Harte, Canon of Windsor, in his Essays on Agriculture, dates the revival of agriculture in England. Tusser, the author of 'Five Hundred Points of Husbandry,' published in 1562, was a scholar of Eton, and afterwards of Trinity Hall, Cambridge, before he applied to farming and literature. Sir R. Weston, who was ambassador from England to the Elector Palatine and king of Bohemia in 1619, introduced clover into England; his 'Discourse on the Husbandry of Brabant and Flanders' was published in 1645, and is said to mark the dawn of the vast improvements which have since been effected in Britain. Evelyn, who is considered one of the greatest encouragers of improvements that has ever appeared, was, as is well known, a gentleman attached to literature and science, and often employed in the public service. He published, in 1664, his 'Sylva, or a Discourse on Forest-trees and the Propagation of Timber in his Majesty's Dominions,' with many other works, which had a great influence in the improvement of the country. Jethro Tull, who introduced the drill husbandry, and published his work on Horse-hoeing Husbandry in 1731, was bred a barrister; he first made experiments on his own estate, and then practised farming. —*Royle on the Productive Resources of India.*



[Portrait of John Taylor, the Water Poet.]

TAYLOR, THE WATER-POET.

It is our intention, in the two succeeding numbers, to give an account, with extracts, of a journey made by this extraordinary man from London to the Highlands, in which he undertook to perform this exploit in the days of bad roads, with a horse and servant, without a penny in his pocket, and engaging not to receive any alms. The hospitality of his countrymen welcomed him throughout this pilgrimage, and he appears not only to have suffered very few privations, but to have lived upon the fat of the land for many weeks. His account of this journey, which is partly in prose and partly in verse, is a very remarkable picture of manners. Some notion of the man himself, which we extract from the 'Book of Table Talk,' may fitly precede it.

"This choice 'son of Apollo and darling of the Delian deity,' was called the Water-poet, not because he drank water, but because he went upon water. In short he was a London waterman, and, during a part of his poetical existence, he got his living by rowing on the Thames. Pope has given him a lift towards immortality, with other deadly-lively writers, in his Dunciad:

> "Taylor, their better Charon, lends an oar,
> Once swan of Thames, though now he sings no more."
>
> *Book* iii., *v.* 18.

"But his contemporary and boon-companion Will Winstanley says, more in detail, 'Some perhaps may think this person (John Taylor) unworthy to be ranked amongst those sons of Apollo whom we mentioned before; but to them we shall answer, that, had he had learning according to his natural parts, he might have equalled, if not exceeded, many who claim a great share in the temple of Muses. Indeed, for aught I can understand, he never learned no further than his *Accidence*, as we may learn from his own words in one of his books:—

> "'I must confess I do want eloquence,
> And never scarce did learn my *accidence;*
> For, having got from *possum* to *posset*,
> I there was gravel'd, could no further get.'

"He was born in Gloucestershire, where he went to school; and was afterwards bound apprentice to a waterman of London, a laborious trade: and yet though it be said that *ease is the nurse of poetry*, yet did he not only follow his calling, but also plyed his writings, which in time produced above fourscore books,* which I have seen; besides several others unknown to me; some of which were dedicated to King James and King Charles I., and by them well accepted, considering the meanness of his education to produce works of ingenuity. He afterwards kept a public-house in Phœnix-alley, by Long-acre,† continuing very constant in his loyalty to the king, upon whose doleful murthur he set up the sign of the *Mourning Crown;* but that being counted malignant in those times of rebellion, he pulled down that and hung up his own picture, under which were writ these two lines:

> "'There 's many a king's head hang'd up for a sign,
> And many a saint's head too, then why not mine?'

"He dyed about the year 1654, upon whom one bestowed this epitaph:

> "'Here lies the Water-poet, honest John,
> Who rowed on the streams of Helicon',
> Where having many rocks and dangers past,
> He at the haven of heaven arriv'd at last.'
>
> *Winstanley's Lives of the Poets*, p. 167. (ed. 1687.)

"Sir Egerton Brydges, in his 'Censura Litteraria,' has given a long list of the Water-poet's pieces; and in his 'Restituta' the same diligent explorer of the recondite and dusty paths of literature has laid before us a marvellous exploit of old John's (in his character of a waterman, not in his poetical capacity), together with an abstract of another work of Taylor's not entered in the 'Censura.'

"This scarce tract is entitled, 'John Taylor's last Voyage and Adventure, performed from the twentieth of July last, 1641, to the tenth of September following. In which time he passed, with a sculler's boat, from the citie of London to the cities and townes of Oxford, Gloucester, Shrewsbury, Bristol, Bathe, Monmouth, and Hereford The manner of his passages and entertainment to and fro, truly described. With a short touch of some wandring and some fixed schismatiques; such as are Brownists, Anabaptists, Famalies, Humorists, and Foolists, which the author found in many

* "He wrote fourscore books in the reign of James I. and Charles I."—*Notes to Dunciad.*

† "He afterwards (like Edward Ward) kept an ale-house in Long Acre."—*Notes to the Dunciad.* Ned Ward was a wit, and the calling of tapsters or of publicans seems to have been a pretty common resource for poor wits and poets. If they had poets only for their customers, we doubt whether they prospered much.

places of his voyage and journey. Printed at London by F. L. for John Taylor, and may be had at the shoppe of Thomas Baites in the Old Baily, 1641, 8vo., pp. 32.'

"Some people who are acquainted with the run of our English rivers, and the paucity of canals in those days, may wonder how John made his voyage; but the truth is, whenever it suited him, he put his boat into a waggon, and *voyaged* on dry land until he came to another river. Thus, on reaching the head of the Isis, or the spot above Oxford, where that river ceased to be navigable, he hired a waggon which carried him with his boat and boys to the stream of the Stroud. On his return, when he reached Hereford, he fell into "a quandary or brown study," as to whether it were better to sell his boat there, and return to London by land, or to bring the memorable wherry home again, either by land or water, or both, or how he could. His love of fame surmounted his dread of difficulties, and he resolved that the boat should be restored to its parent Thames, on which he had so long rowed and rhymed. The following extract will give an idea of the course he pursued, and of his manner of writing prose:—

"On Friday, the 27 of August, I passed doune the river of Wye, to a place called Jackson Weare, where with great entertainment and welcome I was lodged, and my men also, at the house of one master Aperley, dwelling there; to whom for many favours I doe acknowledge myself to be extraordinarily beholding. And on the Saturday I came to Lidbrook, to my former hoste, Master Mosse, where understanding and knowing the passage down Wye and up Severne to be very long and dangerous, especially if stormy weather should arise; the boate being split, torne, and shaken, that she did leake very much. These things considered; and that I was within five miles of Severne by land to Newnham, and that by water thither there was no less than 50 miles, I hired a wayne from Lidbrook to Newnham; and on Monday, the 30 of August, I passed up Severne by Glocester; and, working all night, came in the morning betimes to Tewxbury, into another river called Avon; which, by the great charge and industry of Master Sands, is made navigable many miles up into the country. Tuesday, the 31 of August, I came to a market-towne in Worcestershire called Pershore. On the first of September, I came to the auncient towne of Evesholm, (corruptly called Esham,) and seeing that river to bee further out of my way home, I hired another wayne from Esham to Burford, where I found a crooked brook called Windrush; in which brook, after one night's lodging, with my appendixes, having taken each of us to Burford bait, we passed many strange letts and hindrances into the river of Isis or Thames. Againe, at Newbridge, 12 or 14 miles from Oxford by water: by which university I past to Abingdon, the fourth of September, where I stayed till Wednesday the eight day: from thence was I with my boate at home on the Friday following. And thus, in lesse than twenty days' labour, 1200 miles were past to and fro, in most hard, difficult, and many dangerous passages, for the which I give God most humble and hearty prayse and thanks.'

"The account of this famous voyage was not all in prose; the subjoined lines from it may give an idea of John's verse:—

"'Of rivers many writers well have done:
Grave Camden, Drayton's Polyolbion;
And painefull Speede doth in his mappes declare
Where all these brooks and waters were and are.'

"And again, where he speaks of former exploits in the boating line:—

"'And with a pair of oares to that intent
I once from London into Lincoln went;
Where a passage* seven miles was cut throwe
From Lincoln into Trent, and to Gainsborowe.
That way I went, and into Humber past
To Hull, from thence to Ouse, and Yorke at last.
Another voyage to the West againe,
I, with a wherry, past the raging maine,
From London to the Isle of Wight, and thence
To Salisbury—with time and coynes expense.'"

* Called the Foss-dyke.



[Palace-Yard Stairs, 1641.]

SPECIMEN OF PICTORIAL SILK-WEAVING.

The figure and fancy weavers of Spitalfields are now engaged in the manufacturing of a splendid piece of the above description, which they anticipate will be far superior to anything ever produced of the kind either in France or this country. They are determined to make it well worthy the acceptance of royalty, and it is their intention to present it to her majesty Queen Victoria.—It appears that our weavers have been induced to undertake this great work, for a great work we shall presently show that it is, partly out of a laudable spirit of rivalry as respects the artisans of Lyons, and partly for the purpose of proving to their countrymen and countrywomen, that they are at least equal, if not superior, to the silk-weavers of France. In 1840 the weavers of Lyons produced a piece of figured silk of a workmanship so exquisitely fine, that its like was never seen. It is a portrait of the inventor of the Jacquard loom—an excellent likeness—and in effect it is said equal to the finest mezzotint engraving. It is a small picture not more than a foot long. The same artisans also produced in weaving a copy of the will of Henry IV. of France, the letters of which can scarcely be distinguished from the original, or those written by a pen. These exquisite productions of the Lyonese, as we have before intimated, induced our own weavers to attempt a piece of workmanship which will, when finished, far exceed in skill, effect, and magnitude, the French productions we have alluded to. In furtherance of this object a meeting of the figure and fancy weavers of Spitalfields was held about this time last year, for the purpose of hearing the report of a committee, appointed at a former meeting "with the view of causing to be produced a splendid piece of workmanship that should be worthy of Her Majesty's reception, and the inspection of the nobility, gentry, and the British public in general." From this Report we learn, that the patronage and support of all the principal silk-manufacturers have been obtained. It appears that the gentlemen who have thus come forward with their support are also warm friends to the school of design in Spitalfields, from which they anticipate great benefits will arise to the silk-trade of this country.

The production in question will be a pictorial specimen of silk-weaving, and will, no doubt, from the design which we have seen, present a gorgeous and brilliant appearance. The picture will be four feet in width and five feet six inches in depth, and it will take machinery to the enormous amount of eight thousand four hundred cards to make it. The machinery alone has cost many hundred pounds. It is entirely a new construction, and of purely English invention. The number of cards which are required to form the different figures are from eighty to a hundred thousand. The rule paper (or the paper upon which a magnified drawing is made for the purpose of working from) measures seventy-two feet in width and ninety feet in length, or in other words this drawing will occupy no less than six thousand four hundred square feet of paper. The picture when finished will unquestionably be a specimen of workmanship of the greatest art and magnitude ever produced in this or any other country.

The design is the production of a young self-taught English artist of the name of Voyer, who is employed as a paper-designer. In the foreground, if we may so call it, on the right hand, is Neptune in his car, and above are medallions, being good likenesses of Nelson, Collingwood, Jervis, Howe, &c. On the left side we have Mars in his car, supporting medallions of Wellington, Abercromby, Moore, Wolfe, &c. Between the cars of Neptune and Mars, and a little above them, is a scroll with an appropriate motto, under which is a beehive representing industry. In the middle distance the Queen is seen sitting, and by her majesty's side Prince Albert stands, one hand resting on a marble slab, and the other grasping a sword. On the left hand side of the Prince is a figure of Time with his scythe, but between him and the royal pair guardian angels intervene. Over the royal group a dove is seen descending. A little above the middle distance, on each side of the picture, are groups of aërial beings representing Harmony and Honour. In the extreme distance is a view of Windsor Castle. The picture is surrounded by a rich brocade border in the style of Louis XIV., which is cut off from the picture by lines. At the top of the border we have the royal arms of England, at the bottom the order of St. George. The border is principally composed of scrolls of foliage, interspersed with bouquets of flowers in various colours, rich and gorgeous. The picture is in self-colour. This work will occupy a great deal of time in completing, and will cost some thousand pounds.

LUMINOUS OR PHOSPHORESCENT APPEARANCE OF THE SEA.

The attention of mariners, when out at sea, is frequently directed to a peculiar luminosity on the surface of the ocean, the cause of which has been the subject of much superstitious conjecture among the simple-minded seamen, and of inquiry among scientific men. We will first describe the general nature of the phenomena; and afterwards give two or three particular instances, with the results of inquiry into their causes.

The appearance of this luminosity is by no means uniform. Sometimes a vessel, in traversing the ocean, seems to mark out a trace of fire; while each stroke of an oar emits a light, sometimes brilliant and dazzling, at other times tranquil and pearly. These lights are grouped in endless variety. Perhaps, at one time, innumerable shining points float on the surface, and then unite into one extensive sheet of light. At another time the spectator fancies he sees large sparkling figures, like animals in pursuit of each other, incessantly vanishing and re-appearing. It is customary among seamen to speak of a luminous sea as being "all on fire;" but this expression gives a very inadequate idea of the true appearance it presents, the light it emits being rather a pale yellow or greenish sickly and almost supernatural gleam. The surface of the water will often exhibit extensive and distinct patches of luminous fluid, seen at a considerable distance from the ship, and which the latter passes through; or, the luminosity being less local and permanent, the wake of the passing vessel presents a broad and lengthened stream of vivid light; while, midst the darkness of night, a splendid spectacle is often presented by brilliant ridges of light, raised by the agitation of the billows, whose crests they illuminate.

These being the most usual appearances, it is not cause for wonder that various modes of explanation should have been offered. Mayer and some others considered that this phenomenon depended on the same cause as the light emitted by the diamond and other substances after exposure to the sun's rays: he supposed that the sea-water absorbed light, which it afterwards gave out. Others supposed that sea-water is endowed with that peculiar light-emitting property which is possessed by phosphorus. A third party has advanced the opinion that the development of electricity in the water is, in some unaccountable way, the cause of the luminosity; while others again refer it to a kind of decomposition of the water.

But in modern times naturalists have sought in a different direction for the cause. They have regarded

not so much the sea itself, as organic subtances contained in the water. Dr. MacCulloch, after a series of careful examinations, showed clearly that sea-water which contains any animal substances in a dead and putrifying state has the property of becoming luminous. In proportion as the sea becomes green, which seems to be the result of some admixture of foreign matters, living or dead, or both, its tendency to show light increases, and is greatest when it is milky, at which time it is known to contain myriads of such bodies. The remains of fishes are known to become luminous at a certain period after death; and there thus seems to be tolerably satisfactory evidence that this furnishes one source of the luminosity of the sea.

But there seems also abundant evidence that this cause alone is not sufficient to explain the phenomenon; for independent of the objection that we can hardly suppose the sea so to abound in dead fishes as to become extensively luminous from this cause only, several navigators have collected fishes which, while living, shed a bright and brilliant light. Dr. MacCulloch collected a great number of luminous animals, the species of which he has described; but it will perhaps lead to a clearer comprehension of the subject, if we give a recorded instance or two, with all the accompanying circumstances.

Dr. Francis Buchanan states (*Edin. Phil. Journ.*) that while voyaging on one occasion in the northern part of the Indian Ocean, at about seven in the evening, the sea was observed to be remarkably white. The sky was everywhere clear, except around the horizon, where, for about 15°, it was covered with a dark haze, as is usual in such latitudes. The whiteness gradually increased till past eight. The sea was then as high-coloured as milk, not much unlike that portion of the heavens called the 'milky-way,' the luminous appearance very much resembling the brighter stars in that accumulation. It continued in this state till past midnight, and only disappeared as daylight advanced. The whiteness prevented the persons on board from being able to see either the break or the swell of the sea, although both, as was indicated by the noise and the motion of the ship, were considerable. There was much light upon deck, so much, indeed, that the seamen could discern all the ropes with great distinctness.

As a means of determining the probable cause of this phenomenon, Dr. Buchanan drew up several buckets of the water while in a luminous state. There appeared in the water a great number of small luminous bodies, the bulk of which did not appear to be more than a quarter of an inch in length, by nearly the same in breadth; some, however, were an inch and a half long, but the same breadth as the others. They were seen to move in the same manner as a worm does in water When taken up on the finger, they retained their shining faculty even when dry. When brought near a candle, their light disappeared; but, by minute attention, an extremely fine white filament could be observed and lifted upon the point of a pin; it was of a uniform shining colour and form, and about the thickness of a spider's thread. In a gallon of water there were about four hundred of these luminous animals; although the water itself, when in the bucket, presented a natural appearance.

Here the light-emitting animals were found to be of a very small size; but the following incident relates to others of a larger size. Mr. F. D. Bennett (*Narrative of a Whaling Voyage round the Globe*) states, that when he was near the western side of Cape Horn, on a dark and calm night, the sea presented an unusually luminous appearance. While undisturbed, the ocean emitted a faint gleam from its bosom; and when agitated by the passage of the ship, flashed forth streams of light which illuminated the sails and shone in the ship's wake with great intensity. A net, towing alongside, had the appearance of a ball of fire followed by a long and sparkling train; and large fish, as they darted through the water, could be traced by the scintillating lines they left upon its surface.

Mr. Bennett found, on investigation, that the light was emitted from fish of the *Medusa* kind, flat and circular in form, light-pink colour, and eight inches in circumference. The body was undulated at the margin, spread with small tubercles on its upper surface, and bordered with a row of slender tentacles, each five feet long, and stinging sharply when handled. When disturbed, this medusa emitted from every part of its body a brilliant greenish light, which shone without intermission as long as the irritating cause persisted; but when that was withdrawn, the luminosity gradually subsided. The luminous power seemed to reside in a slimy secretion which enveloped the animal, and which was freely communicated to water. When thus detached, it could be made to exhibit the same luminous phenomena as the Medusa itself; and Mr. Bennett found, in confirmation of his opinion, that immersing the medusa in perfectly pure and fresh water communicated to that fluid all the scintillating properties of a luminous sea.

But these were not the only species of fish which exhibited the phenomena. By the aid of a tow-net, ten or twelve specimens of a kind of *Scopelus*, about three inches in length, were caught. They were covered with scales of a steel-grey colour; the fins were spotted with grey; and on each side of the margin of the abdomen was a single row of small circular depressions, of the same metallic grey hue as the scales; a few similar depressions being also scattered on the sides, but with less regularity. The fish were taken alive, and swam actively on being placed in a vessel of sea-water. When handled, as likewise when swimming, they emitted a vivid phosphorescent light from the scales or plates covering the body and head, as well as from the circular depressions in the abdomen and sides, and which presented the appearance of as many small stars spangling the surface of the skin. The luminous gleam, which had sometimes an intermittent or twinkling character, and at others shone steadily for several minutes together, entirely disappeared after the death of the fish.

In another part of his narrative, Mr. Bennett describes three or four other kinds of Medusæ, whose phosphorescent powers were more or less considerable. One is about the size of a crown-piece, with a broad flat margin, which, when viewed at night, and in the living animal, is seen to be studded with a row of luminous dots, placed equidistant, and shining with a delicate blue light. When the creature is suffered to be quiet, the luminous display is confined to the series of dots: but when irritated, the entire body emits a powerful light. The slimy secretion which covers this, as well as the first-named kind of Medusa, shines brightly when rubbed, and appears like many twinkling stars, vanishing and again lighting up, and seeming to run from spot to spot. When assembled in their natural element, these creatures present as many circular patches of light, gleaming brightly, and the more vividly where the sea breaks most; their lights undulating with the waves, and alternately appearing and vanishing.

Were we to detail the theories which have been formed respecting the chemical nature, the seat, the control by the will, and the purpose of the phosphorescent substance, if substance it be, it would carry us to a length which general readers would little suppose We will therefore merely state the substance of the view which one writer (in the 'Edinburgh Cyclop.') takes of the *purpose* for which this luminosity is in-

tended. It is supposed that light does not possess the property of penetrating to a greater depth than one thousand feet in the sea, and that consequently all beneath that depth is in profound darkness. This circumstance, and the prevalence of great darkness even at the surface of the sea in high latitudes, during certain seasons of the year, leads the writer here alluded to to suppose that the power of emitting light is given to these animals as a means of seeking for prey. "The main purpose of it seems to be to indicate the presence of the object which forms the prey, to point out where the pursuit is to be directed. For that reason it seems to be particularly brilliant and decided in those inferior animals which, from their astonishing powers of reproduction, and from a state of feeling apparently little superior to that of vegetables, appear to have been in a great measure created for the supply and food of the more perfect kinds. Thus also it is diffused through every, even the minutest, animalcule, as all these seem in their turns to be destined to the same end, among others, mutual enjoyment and mutual destruction."

But, separating that which is now pretty well made out from that which is still purely hypothetical, we may probably say that the luminosity of the sea proceeds from three sources, viz.: from the phosphorescence which has been long known to be emitted from dead fish; from a peculiar light-emitting faculty possessed by living fish; and from a slimy substance which the water sometimes imbibes from some species of the fish last alluded to.

Province of Ladakh.—The province of Ladakh, on the table-land of the Himálch, has a length of about 250 miles from east to west, and a breadth of 200 from the mountains of Carakorum to the fort of Trankar in Piti. The physical character of the country is thus described:—Although the country of Ladakh lies at a lower elevation than the mountain ranges which serve as ramparts to its northern and southern frontier, yet its general character is that of its gigantic neighbours, and its lowest levels are in the vicinity of perpetual snow. It is, in fact, a series of narrow valleys, situated between mountains not of very great altitude as compared with the land at their feet, but ordinarily towering to a height above the sea which surpasses that of the pinnacles of the Alps. The elevation of Lé itself is more than eleven thousand feet above the sea, and some parts of the northern pergana of Nobra are two thousand feet above that level. The passes that lead into Ladakh on its southern frontier are above sixteen thousand feet high; and there are several mountains within the country which are crossed in travelling from one valley to another, as the Kandu La, Chang La, and Parang La, which are of still greater altitude. The valleys vary in extent; they are sometimes little better than deep ravines or defiles, and even at their greatest expanse they do not exceed a few hundred yards in breadth: occasionally a small plain is left by the receding hills of a mile or two in diameter, but such spots are very rarely met with. The general character of the surface is extreme inequality, consisting of steep and bare mountains capped with snow, and close and rocky dells, with rapid torrents or deep rivers rushing along their hollows. The streams running down the narrow valleys of Ladakh are all torrents fed by the snows, and swell at times with a surprising and dangerous rapidity. The general aspect of the country is bare and sterile; willow and poplar are the only trees: the tataric furze, the dog-rose, hyssop, and wormwood thrive in the fissures of the rocks, and indicate the small extent of productive soil. The winter is severe—ice is sometimes formed on the rivers even in June, and snow falls all the year round on the higher mountains; yet in the valleys the summer heat is intense, and barley is in some places ready for the sickle two months after the time of sowing. But notwithstanding all the disadvantages of a sterile soil and comparatively dry climate, the people manage their resources so well as to reap tolerably good harvests. One feature of their rural economy, deserving imitation in Alpine countries, is thus described:—The first step in the process of tillage is to clear the ground of its incumbrances, and, as far as possible, equalize the surface. The larger blocks of stone are left undisturbed, but the smaller fragments are collected and arranged in longitudinal piles or walls, traversing the face of the declivity which every field more or less presents, forming a series of parallels, the space between which is made as level as possible by conveying materials from the upper to the lower edge of the slope. In this manner a succession of terraces is constructed, each supported by a stone breastwork, and down which stone channels communicating with some spring or natural reservoir on the higher ground conduct a plentiful supply of water. This is the disposition of the grounds in the vicinity of the villages and towns which are situated in the different valleys forming the inhabited and cultivable portion of Ladakh; but even in solitary spots, remote from human habitations, stone dykes may be observed crossing the sloping sides of mountains near their base: these are constructed by the peasants to assist the deposit of soil and gravel by the melting snows, and they are thus left for many years, perhaps for some generations, for the operation of natural agency to prepare for the labour of man, and the more ready conversion of an abrupt and sterile declivity into an accessible flight of terraces of cultivation.—These terraces are regularly irrigated, and the growing crops are weeded with great care, as the scarcity of fodder gives value to every green leaf.—*Moorcroft and Trebeck's Travels in the Himalayan Provinces of Hindustan.*

Fruits in England in the Thirteenth and Fifteenth Centuries.—The only kinds named are apples and pears: three hundred of the latter were purchased at Canterbury; probably from the gardens of the monks. It is believed, however, that few other sorts were generally grown in England before the latter end of the fifteenth century; although Matthew Paris, describing the bad season of 1257, observes that "apples were scarce, and pears scarcer, while quinces, vegetables, cherries, plums, and all shell-fruits were entirely destroyed." These shell-fruits were probably the common hazel-nut, walnuts, and perhaps chestnuts; in 1256 the sheriffs of London were ordered to buy two thousand chestnuts for the king's use. In the Wardrobe Book of the 14th of Edward the First before quoted, we find the bill of Nicholas, the royal fruiterer, in which the only fruits mentioned are pears, apples, quinces, medlars, and nuts. The supply of these, from Whitsuntide to November, cost 21*l.* 14*s.* 1½*d.* This apparent scarcity of indigenous fruits naturally leads to the inquiry, what foreign kinds besides those included in the term spicery, such as almonds, dates, figs, and raisins, were imported into England in this and the following century? In the time of John and of Henry the Third, Rochelle was celebrated for its pears and conger-eels; the sheriffs of London purchased a hundred of the former for Henry, in 1223. In the 18th of Edward the First, a large Spanish ship came to Portsmouth; out of the cargo of which the queen bought one frail of Seville figs, one frail of raisins or grapes, one bale of dates, and two hundred and thirty pomegranates, fifteen citrons, and seven ORANGES. The last item is important, as Le Grand d'Aussy could not trace the orange in France to an earlier date than 1333; here we find it known in England in 1290; and it is probable that this was not its first appearance. The marriage of Edward with Eleanor of Castile naturally led to a greater intercourse with Spain, and, consequently, to the introduction of other articles of Spanish produce than the leather of Cordova, olive-oil, and rice, which had previously been the principal imports from that fertile country, through the medium of the merchants of Bayonne and Bordeaux. It is to be regretted that the series of Wardrobe Books is incomplete, as much additional information on this point might have been derived from them. At all events it appears certain that Europe is indebted to the Arab conquerors of Spain for the introduction of the orange, and not to the Portuguese, who are said to have brought it from China. An English dessert in the thirteenth century must, it is clear, have been composed chiefly of dried and preserved fruits—dates, figs, apples, pears, nuts, and the still common dish of almonds and raisins.—*Manners and Household Expenses in England in the Thirteenth and Fifteenth Centuries, by Mr. J. H. Turner, from Original Records.*

Fans.—In the south of Italy *men* still continue to use the fan, and in hot weather one may often see a captain of dragoons, moustached and "bearded like the pard," fanning himself with all the graces and dexterity of a young coquette.—*Book of Table Talk.*



[The Prioress and the Wife of Bath.]

CHAUCER'S PORTRAIT GALLERY.

THE MANCIPLE.

The name of this officer of our old inns of court, colleges, &c., whose business it was to purchase their provisions, is supposed to be derived from the Latin word *manceps*, which signified more particularly the superintendent of a public bakehouse, and from thence a baker generally. The office still exists, as for instance at the London Charter House.

"A gentle Manciple was there, of a temple
Of which achatours* mighten take example
For to be wise in buying of vitaille.
For whether that he paid, or took by taille†,
Algate‡ he waited§ so in his achate,
That he was aye before in good estate.
Now is not that of God a full fair grace,
That such a lewed|| manne's wit shall pace¶
The wisdom of a heap of learned men?
Of masters had he more than thries ten,
That were of law expert and curious,
Of which there was a dozen in that house
Worthy to be stewardes of rent and land
Of any lord that is in Engle-land.

To maken him live by his proper good,
In honour debtless, but if he were wood*,
Or live as scarcely† as him list desire;
And able for to helpen all a shire
In any case that mighte fall or hap,
And yet this Manciple set their aller cap:"

or, as we should now say, made fools of them. In the absence of any necessity for illustrating this description, the tale told by the Manciple may furnish matter for a few extracts and observations. This is a curious medley. Phœbus, it appears, once dwelt "in earth adown," and had a house, and a wife, and various other domestic comforts. He had also—

"In his house a crow,
Which in a cage he fostered many a day,
And taught it speaking, as men teach a jay.
White was this crow, as is a snow-white swan,
And counterfeit the speech of every man
He coulde, when he should tell a tale.
Therewith in all this world no nightingale
Ne coulde by an hundred thousand del
Singen so wondrous merrily and well."

And it would appear that all crows prior to this period possessed the same beauty of voice and feather. But a dark fate overhangs Phœbus and the poor crow. For—

"God it wote there may no man embrace
Ne to distraine a thing, which that nature
Hath naturally set in a creature;"

* Purchasers.

† That is to say, on credit, using the *tally* as the mode of reckoning.

‡ Always.

§ Watched, or, in other words, was ever so attentive to his business.

|| Unlearned.

¶ Pass or surpass.

* Mad.

† Sparingly.

and the story continues with the following sweet passage, for which, indeed, we chiefly referred to it:—

"Take any bird, and put it in a cage,
And do all thine intent and thy corage*
To foster it tenderly with meat and drink,
Of alle dainties that thou canst bethink,
And keep it all so cleanly as thou may;
Although the cage of gold be never so gay,
Yet had this bird by twenty thousand fold
Lever in a forest that is wild and cold,
Go eating worms, and suche wretchedness.
For ever this bird will do his business
To escape out of his cage when that he may:
His liberty the bird desireth aye."

Phœbus, overlooking or not caring for all this, does "distrain" the poor crow, and the consequence is that Nature punishes his violation of her laws, by making the crow inform him of his wife's faithlessness in his absence, and he immediately kills her. Remorse now seizes him, and he believes unjustly that the crow has told him false. So after bewailing his loss with great grief and lamentation, he turns to the poor crow:—

"O, falsé thief, said he,
I will thee quite anon thy falsé tale
Thou sung whilom like any nightingale;
Now shalt thou, falsé thief, thy song foregone,
And eke thy whité feathers every one.
Ne never in all thy life ne shalt thou speak;
Thus shall men on a traitor be awreke†.
Thou and thine offspring ever shall be black;
Ne never sweeté noisé shall ye make,
But ever cry against tempést and rain,
In token that through thee my wife is slain."

And so, in effect, ends this veritable sad history.

THE PRIORESS.

"There was also a nun, or prioress," says Chaucer, in the commencement of his description of that delicate, tender-hearted, sentimental personage, one of the most celebrated, and at the same time one of the happiest of the great poet's dramatic creations. The word 'nun,' (Latin, *nonna*) is said to be derived from Egypt, and to signify a virgin; other accounts make the original meaning of the Latin word 'a penitent.' The earliest phase of female monachism appears to have been the custom common to all the religions of antiquity, of virgins dedicating themselves to the performance of divine worship, and which, in reference to Christianity, had become by the latter part of the third century a matter of frequent occurrence, as we learn from the writings of Cyprian and Tertullian. At that period also, whilst some of the ecclesiastical or canonical virgins, as they were denominated, continued, after their vows of self-sacrifice, to reside under the parental roof, others had already adopted the example of the monks, and formed themselves into communities. From that time their history becomes a part of the general history of monachism.

Nuns, like monks, had on their entrance into the cloister to undergo a novitiate of from one to three years before their admission into the order, to take the three vows of chastity, poverty, and obedience, and to receive the tonsure. In the government of these houses there were sometimes, as in the case of the Gilbertines, no less than three prioresses associated together, taking the active duties of the office in rotation. These comprised matters of a varying kind. There were the nun's vestments, for instance, on the one hand, to cut out, to see to their making, and when made, to divide among the members; on the other, there were the chapters to be held, penances to be enjoyed, licences or allowances to be granted or refused, sick to be visited and comforted. Of course respect and obedience were paid by all the nuns to their prioress; although she too had to walk circumspectly by the rules set down. She was not at liberty to sit near any man in the convent without some discreet sister between, nor elsewhere if it could be conveniently avoided; a cogent reason, by the way, for the presence of the nun, the prioress's chaplain, who is always by the side of the fair governor, in the pilgrimage to Canterbury. The prioress was not even permitted to leave the dormitory of the convent after dinner without the company of some of her sisters. We must not omit to mention that among her duties was at one period that of hearing confessions; but this was at last done away with for an amusing reason. It was found there was no end to the questions which female curiosity induced them to put. We should fear Chaucer's gentle Prioress could not be quite absolved from this charge:—

"There was also a nun, a prioress,
That of her smiling was full simple and coy,
Her greatest oath was but by Saint Eloy;
And she was cleped Madame Eglantine.
Full well she sang the servicé divine,
Entuned in her nose full sweetely.
And French she spake full fair and fetisly
After the school of Stratford atte Bow:
For French of Paris was to her unknow."

The seminary which Chaucer so pleasantly satirizes for its bad French, is supposed by Mr. Warton to have been a fashionable place of instruction for nuns or novices; and the idea is not unsupported by the known facts. The ancient Benedictine nunnery of "Stratford atte Bow" *was* famous in Chaucer's time, and not improbably on account of its educational character. Philippe de Mohun, duchess of York, who died in 1431, bequeathed to the prioress five shillings, and to the convent twenty shillings; a slight but sufficient testimony perhaps of the grateful remembrance of instruction received there.

The Prioress's very pretty little oath, when she did swear—and it must be remembered our English ladies were not at all particular in such matters, even down to the times of good Queen Bess—has excited more contention among the commentators than one would have thought such a matter deserved. Warton says that St. Loy, which is the form in which the word appears in all the manuscripts, means St. Lewis: but in Sir David Lyndsay, St. Eloy appears as an independent personage, having some undefinable connection with horses or horsemanship:

"Saint Eloy, he doth stoutly stand,
Ane new horseshoe in his hand."

And again:

"Some makis offering to Saint Eloy,
That he their horse may well convoy."

The scrupulous nicety visible in the Prioress's oaths, in her singing, and in her pronunciation of the Stratford-atte-Bow French, extends to her behaviour at table, where she is a perfect example of what was good breeding in the fourteenth century:

"At meate was she well ytaught withal;
She let no morsel from her lippes fall,
Ne wet her fingers in her saucé deep.
Well could she carry a morsel, and well keep,
Thatte no drop ne fell upon her breast.
In courtesy was set full much her lest*.
Her over-lippe wipéd she so clean,
That in her cuppe was no farthing seen
Of greasé, when she drunken had her draught.
Full semely after her meat she raught."

* Or, in other words, all that thy inclination or heart prompt.
† Avenged.

* Pleasure.

And her mental characteristics and her dress are in fine harmony with her manners:

"And sikerly she was of great disport,
And full pleasánt, and amiable of port;
And pained her to counterfeiten cheer
Of court, and be estatelich of mannére,
And to be holden digne of reverence.
But for to speaken of her conscience,
She was so charitable and so piteóus,
She woulde weep if that she saw a mouse
Caught in a trap, if it were dead or bled.
Of smalle houndes had she, that she fed
With roasted flesh, and milk, and wastel bread*.
But sore wept she, if one of them were dead,
Or if men smote it with a yerde† smart.
And all was conscience and tender heart.
Full seemely her wimple ypinched was,
Her nose tretis‡; her eyen grey as glass;
Her mouth full small, and thereto soft and red;
But sikerly she had a fair forehead:
It was almost a spanne broad, I trow,
For hardily§ she was not undergrow.
Full fetise was her cloak, as I was ware.
Of smalle coral about her arm she bare
A pair of beades gauded all with green,
And thereon hung a brooch of gold full sheen,
At which was first ywritten a crowned A,
And after, *Amor vincit omnia*."

The same tender motto appears to be referred to in 'The Squire of Low Degree,' where we find the following passage:—

"In the midst of your shield there shall be set
A lady's head with many a fret;
Above the head written shall be
A reason for the love of me;
Both O and R shall be therein,
With A and M it shall begin."

Beads thus "gauded all with green," or silver gilt, or gold, are frequently mentioned in old wills, as in that of Eleanor de Bohun, duchess of Gloucester, 1399: "Item, I devise to Madame and mother, the Countess of Exford, a pair of paternosters of coral of fifty beads, ornamented with gaudes of gold," &c.: and in other old writers of Chaucer's period, as in the pages of Gower, &c.

Our host, Harry Bailly, is evidently much struck with the Prioress, and nothing can be more courteous or gallant than his bearing towards her.

Addressing her, continues the poet,

"As courteously as it had been a maid,"

after the Shipman's tale, he says—

"My Lady Prioresse, by your leave,
So that I wist I should you not agrieve—
I woulde demen that ye tellen should
A talé next, if so were that ye would.
Now will ye vouchsafe, my lady dear?"

Who could reply otherwise than pleasantly to such insinuating politeness? "Gladly," says the amiable Prioress; and immediately tells a tale founded on an incident peculiarly calculated to arouse her feminine sympathies—the murder of a Christian child by the Jews in some far-off country. The Sutherland manuscript represents her thus engaged, with her right hand uplifted, as if calling the particular attention of the pilgrims to what she was saying; a little evidence of her habitual authority, perhaps unconsciously, breaking out: whilst in her left hand are seen the beads of coral. The artist has made her belong to the Benedictine Nuns, by the dress he has given to her—a black cloak over a white tunic.

* A kind of cake-bread made from the finest flour.
† A rod. ‡ Long and well proportioned.
§ Certainly.

TAYLOR'S PENNYLESS PILGRIMAGE.

The very curious tract to which we referred in our last number is entitled 'The Pennyless Pilgrimage, or the Moneyless Perambulation of John Taylor, alias the King's Majesty's Water-Poet; how he travelled on foot from London to Edinburgh in Scotland, not carrying any money to or fro, neither begging, borrowing, or asking meat, drink, or lodging.' Taylor, in an address which precedes this description of his travels, says they "were not undertaken neither in imitation or emulation of any man, but only devised by myself, on purpose to make trial of my friends, both in this kingdom of England and that of Scotland." His travels were thus a test of the hospitality of the country in the year 1618; in which year, on the evening of the 14th of July, he took his

"latest leave, thus late
At the Bell Inn, that 's extra Aldersgate."

His companions were his man, and a horse that carried his "provant," which consisted of bacon, biscuit, cheese, and good aqua-vitæ. If the hospitality of the country had failed, therefore, the provident poet had taken some security against starvation. His journeys were not, however, very laborious: he went that night as far as Islington. The next morning he took his way through Hollywell (now called Holloway), Highgate, and Whetstone, on to St. Alban's,

"Where Master Taylor, at the Saracen's Head,
Unask'd (unpaid for), me both lodg'd and fed."

This was the second night of his free quarters. The next day was a weary one; he went twelve miles without any one asking him to drink; and he and his man were fain to resort to the "provant" in the knapsack, with no better shelter than a hedge. But the night solaced him; he established himself at the Queen's Arms at Stony Stratford, and again had nothing to pay. Of Daventry he gives a bad account: he describes it as "that stony town," and the hearts of the people appear to have been as stony as the streets. The hostess of the Horse-Shoe, with the tapsters, ostlers, and chamberlains, stared at him as at a monster: and they never said to him, "Come near the house, my friend." The poet is indignant at this, and he consigns the hostess to immortal infamy by describing a great wart on her nose. Thus it is that our personal feelings too often direct the taste and judgment: had the hostess been kind, the wart might have become a beauty, or at any rate have been unseen amidst her

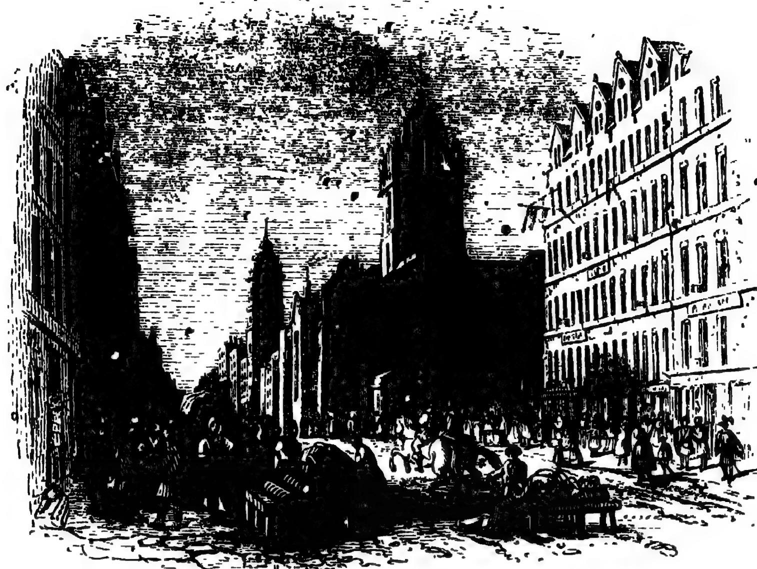
"Nods, and becks, and wreathed smiles,
Such as hang on Hebe's cheek,
And love to live in dimple sleek."

In the absence of rest and merriment at Daventry, the poor waterman-poet, whose feet were unused to this sort of exertion, made a shift to hobble on seven miles farther, where he bivouacked on Dunsmore Heath. The next day, however, he was in a happier plight:

"Through plashes, puddles, thick, thin, wet, and dry,
I travell'd to the city Coventry.
There Master Doctor Holland caus'd me to stay
The day of Saturn and the Sabbath-day."

It is pleasant to see the learned and laborious translator thus welcoming his humble brother in the republic of letters. Dr. Philemon Holland was the master of Coventry Free-School; and there, practising physic at the same time, he went on adding folio to folio, till he had made many of the Latin and one or two of the Greek classics familiar to his countrymen. The wits laughed at his useful labours: it was of him they wrote—

"Philemon with translations does so fill us,
He will not let Suetonius be Tranquillus."



[Edinburgh in the beginning of the Seventeenth Century.]

At Lichfield Taylor was again fortunate: a friendly joiner gave him welcome; but in the country which we now call the Potteries, the pilgrim found lenten entertainment. Stone gave him nothing; neither did Newcastle (which he takes care to explain is not Newcastle-upon-Tyne). So far we have travelled with our poet in verse, which sometimes limps, like his wearied self; but he now gives us an adventure in plain prose. "In this town of Newcastle I overtook an hostler, and I asked him what the next town was called, that was in my way toward Lancaster: he, holding the end of a riding-rod in his mouth, as if it had been a flute, piped me this answer, and said, 'Talk on the hill;' I asked him again what he said: 'Talk on the hill.' I demanded the third time; he answered me as he did before, 'Talk on the hill.' I began to grow choleric, and asked him why he could not talk, or tell me my way, as well there as on the hill. At last I was resolved, that the next town was four miles off me, and that the name of it was 'Talk on the Hill.'" Will some good dweller in the town of Talk inform us if the joke is still current?

At Adlington, near Macclesfield, Sir Urian Legh entertained the pilgrim for four days:—

"At his own table I did daily eat,
Whereat, may be suppos'd, did want no meat;
He would have giv'n me gold or silver either,
But I, with many thanks, received neither."

In recompense for this hospitality Taylor bestows upon his host some forty lines of commendation; and we must do the poor waterman the justice to say that they are written in a manly tone of gratitude, and that he properly appreciates the praise which would be welcome to a soldier and a gentleman. *Near* Manchester he was again entertained at a private house; but *at* Manchester, when steam-engines and jennies and power-looms were things undreamt of, and the town was a dull trading-place, like many other inland towns, the most prodigal hospitality was poured upon the traveller; and he went on eating and drinking, like the shepherd of Arcadia piped, "as if he should never grow old:"—

"I must tell,
How men of Manchester did use me well
Their loves they on the tenter-hooks did rack,
Roast, boiled, bak'd, too, too much, white, claret, sack;
Nothing they thought too heavy or too hot,
Can follow'd can, and pot succeeded pot."

At Preston the pilgrim was again received with feasting and worship: he lodged at the Hind, and the mayor waited upon him to show his respect. At Lancaster he was welcomed as if he had been a lord. For all this hospitality he fairly owns he was indebted to the recommendation of Sir Urian Legh; and with the same passport he went on gallantly through Westmoreland. At Penrith (he spells it Perith, which is still the local pronunciation of the word) he was again lodged and boarded; and welcome was he made also at merry Carlisle. Onward he went through the thinly populated country that lies between Carlisle and Edinburgh; though, as he describes it, "a fertile country for corn and cattle." At last he enters Edinburgh, worn out with fatigue and altogether moneyless. His old good luck soon befalls him: and he is in comfortable quarters. The description of Edinburgh more than two centuries ago will amuse our Scotch friends. "So leaving the castle, as it is both defensive against any opposition, and magnifick for lodging and receipt, I descended lower to the city, wherein I observed the fairest and goodliest street that ever mine eyes beheld, for I did never see or hear of a street of that length (which is half an English mile from the castle to a fair port which they call the Neather Bow), and from that Port, the street which they call the Kenny-bate is one quarter of a mile more, down to the King's Palace, called Holyrood House, the buildings on each side of the way being all of squared stone, five, six, and seven stories high, and many bye-lanes and closes on each side of the way, wherein are gentlemen's houses, much fairer than the buildings in the High Street, for in the High Street the merchants and tradesmen do dwell, but the gentlemen's mansions and goodliest houses are obscurely founded in the aforesaid lanes; the walls are eight or ten feet thick, exceeding strong, not built for a day, a week, a month, or a year; but from antiquity to posterity, for many ages. There I found entertainment beyond my expectation or merit, and there is fish, flesh, bread, and fruit, in such variety, that I think I may offenceless call it superfluity or satiety."

From Edinburgh Taylor proceeds to Leith, where he is welcomed by Master Barnard Lindsay, one of the grooms of his majesty's bedchamber. His notice of the commerce of Leith presents a curious contrast to the Leith of the present day: "I was credibly informed, that within the compass of one year there was shipped away from that only port of Leith fourscore thousand boles of wheat, oats, and barley into Spain, France, and other foreign parts, and every bole contains the measure of four English bushels, so that from Leith only hath been transported three hundred and twenty thousand bushels of corn; besides, some hath been shipped away from Saint Andrews, from Dundee, Aberdeen, Disert, Kirkady, Kinghorn, Burnt Island, Dunbar, and other portable towns, which makes me to wonder that a kingdom so populous as it is, should nevertheless sell so much bread-corn beyond the seas, and yet to have more than sufficient for themselves."

At Burnt Island Taylor found many of his especial good friends, acquaintances that he had made about the court of James I., gentlemen that he had probably rowed from Palace Yard to Bankside. Amongst others was Sir Henry Witherington. Taylor, it seems, had been at the taking of Cadiz, and was in the same ship with Witherington. The old shipmates compared notes of their voyage; and Taylor tells a story of landing on one of the Azores with fourteen others, in the expectation of finding fruit. He shall relate the pith of his adventure in his own words:—"In the mean space the wind did blow so stiff, and the sea was so extreme rough, that our ship-boat could not come to the land to fetch us, for fear she should be beaten in pieces against the rocks: this continued five days, so that we were almost famished for want of food: but at last (I squandering up and down) by the providence of God, I happened into a cave or poor habitation, where I found fifteen loaves of bread, each of the quantity of a penny loaf in England, I having a valiant stomach of the age of almost a hundred and twenty hours' breeding, fell to, and ate two loaves and never said grace: and as I was about to make a horse-loaf of the third loaf, I did put twelve of them into my breeches and my sleeves, and so went mumbling out of the cave, leaning my back against a tree, where upon the sudden a gentleman came to me, and said, 'Friend, what are you eating?' Bread' (quoth I). 'For God's sake,' said he, 'give me some.' With that, I put my hand into my breech (being my best pantry), and I gave him a loaf, which he received with many thanks, and said, that if ever he could requite it, he would. I had no sooner told this tale, but Sir Henry Witherington did acknowledge himself to be the man that I had given the loaf unto two and twenty years before."

[To be continued.]

SEWERS.

In treating on the construction and management of sewers, the name will be used in the limited sense in which it is commonly applied to the subterraneous passages formed for the drainage of towns; and the sewers of London, being the most important, and those respecting which most information can be procured, will form the principal subject of this notice.

Covered drains or sewers of great size, and of very solid construction, still exist under the streets of some ancient Roman cities, and especially of Rome itself. The cloacæ or sewers of Rome are so capacious that barges are said to have been floated through them; and their magnitude has led to the conjecture that, although their origin is usually attributed to the time of Tarquin, they are in reality the remains of some older city; their dimensions being considered disproportionate to the extent of the then infant city of Rome.

In modern times the sewers of London stand unrivalled for extent and excellent construction, although much yet remains to be done to render them adequate to the necessities of an immense and constantly increasing population. It will be seen that the early legislative enactments relating to sewers, so far as they provide for drainage at all, do so for the drainage of the surface only; while, from the practice so common in London, of building not only cellars, but habitable apartments also, much below the level of the ground, convenient means of drainage to a considerable depth are essential to the health and comfort of the inhabitants, and the dryness and stability of the houses themselves. Although additional powers have been from time to time conferred upon some of the commissions by which the sewage of the metropolis is managed, this defect is far from being completely remedied. A little consideration as to the circumstances under which the duties of the commissioners have gradually changed and extended, will tend to account for many of the defects of the existing system, which deserves admiration for its comparative excellence, rather than calls for any expression of dissatisfaction at its admitted defects. Mr. Walker, the engineer, in evidence before a parliamentary committee in 1834, stated that when, in the previous year, some French engineers were sent over to England by their government, nothing seemed to attract their attention more than the sewage of London, the drainage of Paris being a subject then under consideration; "but," he adds, "their ideas of the proposed drainage never extended to more than taking away the surface drainage, and they seemed astonished when I told them that the water from our lowest cellars drains into those great sewers." It is very curious to trace the effect of the extension of population in and about London in converting what were, a few centuries ago, streams of pure water, into receptacles and channels for the filth and refuse of a densely inhabited district, until they have become so offensive, and so inadequate to the offices required of them, as to render necessary the substitution of deep and wide subterraneous channels, or arched sewers, for the once healthy, but now pestilential rivulets. This has been done by the writer of a paper in Knight's 'London' (No. 13), to which we are indebted for the following particulars respecting the watercourse now known as the Fleet Ditch or Sewer, which affords the most striking example of these changes. Stow tells us that "Anciently, until the time of the Conqueror, and two hundred years later, this city of London was watered (besides the famous river of Thames on the south part) with the river of the Wells, as it was then called, on the west; with a water called Walbrook running through the midst of the city into the river of Thames, severing the heart thereof; and with a fourth water, or bourn, which ran within the city through Langbourn Ward, watering that part in the east. In the west suburbs was also another great water, called Oldborn, which had its fall into the river of Wells." In this passage, which enumerates the principal natural watercourses of the old city, the Fleet is designated by a title indicative of the "choice fountains of water, sweet, wholesome, and clear," which, from the northern suburbs of the city, contributed their tributary rills to the main stream, which descended from the high ground about Hampstead. However clear and sweet this river may once have been, it was early rendered otherwise by the extension of population on its banks. The paper alluded to above tells us that "so early as 1290 the monks of White Friars complained to the king and parliament that the putrid exhalations arising from it were so powerful as to overcome all the frankincense burnt at their altars during divine service; and even occasioned the deaths of many of the brethren." Many attempts

were made to cleanse the Fleet river, and restore it to its ancient condition of utility as a navigable stream; but they proved unavailing, and the stream, which formerly conducted vessels with merchandize as far as Fleet Bridge and Old Borne (now Holborn) Bridge, if not farther, became, in the language of Pope,

"The king of dykes! than whom no sluice of mud
With deeper sable blots the silver flood."

The total surface which is drained into this stream in the Holborn and Finsbury districts of sewage is stated to be about 4444 acres, of which about 1788 acres are now covered with streets and houses; while in 1746 the surface so built upon was only about 400 acres. This increase of buildings, besides greatly augmenting the ordinary drainage from the surface, by reducing its absorption, has rendered necessary some provision for carrying off the refuse water and filth from thousands of habitations. The Fleet dyke or ditch has therefore been, for several years past, in course of conversion into a great arched sewer, of which only a small portion now remains incomplete. In 1826 it was determined to enlarge this sewer for a length of nearly 16,000 feet, from Holborn to Kentish Town;—the expense was estimated at 46,682*l*. The greater part of this work has been already executed, the remaining length being chiefly in the direction of the intended new street north of Farringdon Street. The commissioners make it a principle, wherever it is practicable, to form their covered sewers under the pavement of streets; a circumstance which occasionally deters them from covering sewers in districts where the arrangement of the streets is not fully decided on, although the increase of population may render the open channels a great nuisance.

The sewers of London and its suburbs are divided among seven trusts or commissions, and it has long been considered that the system of management is capable of considerable improvement; as the want of uniformity of plan, and of cordial co-operation in the several districts, is liable, in various ways, to lead to inconvenience. A select committee of the House of Commons was appointed in 1834 "to inquire into the state of the law respecting sewers in and near the metropolis, and into the administration of the same by the various Boards of Commissioners of Sewers, with a view to suggest such amendments in both as shall be deemed advisable;" and this committee, after a careful investigation, pronounced their opinion that the law is especially deficient in three points. These defects are, 1st, a want of uniformity, the law itself varying in different districts, or, if not so, being variously interpreted by their respective commissions; 2nd, the want of publicity and responsibility, there being some of the trusts in which the courts are not open to the public, and where the right of the rate-payers to inspect the accounts is not admitted; and, 3rd, equality of rateage with inequality of advantages, it being the usual practice to rate all houses which either receive a benefit from the sewers or avoid a damage. On this system very few houses are exempt, as all may be considered to derive benefit more or less from the surface drainage of the streets. So long as merely the surface drainage of the town was attempted, this principle might be considered equitable; but as the sewers are now used for other important purposes, and it is highly desirable that every house should have an underground communication with them, it appeared to the committee unjust that the same rate should be levied upon houses possessing this advantage, and upon such as neither have it, nor, without great additions to the present sewage, can be supplied with it. In some cases the commissioners appear not to be possessed of necessary powers for making new sewers, or even covering in existing open sewers; while the law provides no means of compelling the builders of new streets to provide them with proper drainage, or even of enforcing communication with a sewer when made. A striking illustration of the evils arising from the want of unity of plan among the various commissions is afforded by the fact stated in evidence before the committee, that the improvement and enlargement of the sewers in the Holborn and Finsbury divisions, which communicate with the Thames through those of the City of London commission, occasioned so great an influx of water to the latter, that they became totally unable to discharge it; and consequently their contents were, during heavy falls of rain, forced into the neighbouring houses. This circumstance has rendered necessary the construction of enlarged sewers through the city at great expense; "but," as observed in the Report, "if anything like combination had existed previously, the improvements would have been carried on simultaneously, and the inconvenience would never have occurred." The evidence given on this occasion proved that much was being done to remedy the defects of the sewage, both by deepening, enlarging, and otherwise improving old sewers, and by making new ones. Mr. Daw, chairman of the City of London commission, stated that full one-third of the sewers in the city had been made in the ten years preceding 1834. A return made by the officers of the Westminster division shows that, between 1807 and 1834, there had been built, within the Ranelagh Level,* 2692 feet of open and 6886 feet of covered sewers, making a total length of 9578 feet, at the cost of the commissioners; while the length made during the same period by private persons was 91,708 feet. From a letter printed in the Appendix to the Report of the Committee, respecting the district drained by that portion of the Fleet ditch which is within the jurisdiction of the commissioners for the Holborn and Finsbury divisions, it appears that no less than 31,000 feet of new sewers were made in that district between 1822 and and 1831, at a cost of more than 23,000*l*. Since the year 1834, improvements have been going on rapidly in some districts. In the Tower Hamlets division, as appears by the evidence of the surveyor before the Select Committee of the House of Commons on the Health of Towns, in 1840, nearly 25,000 feet of new sewers were proposed in 1834 or 1835, of which four-fifths were completed by 1840. There do not appear to be published data from which the total extent of the sewers in the metropolitan districts can be ascertained: but by the courtesy of Mr. Roe, surveyor of the Holborn and Finsbury divisions, we are enabled to state that the total length of the main covered sewers in those districts, down to April, 1841, was as follows:—

	Feet.		Miles.
Holborn division . .	217,566	or about	41½
Finsbury division . .	220,885	. . . .	41¾
Total .	438,451	. . . .	83

Of these main sewers nearly one half have been made within the last twenty years, and ten miles and three-quarters in the three years from January, 1838, to December, 1840. In addition to these, there are sixteen miles of small sewers to carry off the surface water from the streets and roads, and two hundred and fifty-four miles of drains leading from houses to the main sewers. (*London*, No. 13, p. 231.)

[To be Continued.]

* *Level* is an arbitrary term, originally applied to the district drained by a particular sewer, although there are now several outlets for the drainage in many districts that bear the name of levels. In the Ranelagh district, for instance, besides the principal outlet, which is called the Ranelagh sewer, the Commissioners' map shows six minor openings into the Thames, three of which receive the sewage from several branches.

POPULATION OF GREAT BRITAIN— CENSUS OF 1841.

ACCOUNT of the TOTAL POPULATION, according to the Census taken in June, 1841, of each County in Great Britain, distinguishing Males and Females; also the Number of Houses Inhabited, Uninhabited, and Building. This Return includes only such part of the Army, Navy, and Merchant Seamen as were at the time of the Census on shore within the Kingdom.

ENGLAND.

Counties.	Persons, 1841.			Houses, 1841.		
	Males.	Females.	Totals.	Inhabited.	Uninhabited	Building.
Bedford	52,169	55,768	107,937	21,235	521	211
Berks	79,674	80,552	160,226	31,472	1,566	200
Buckingham	76,316	79,673	155,989	31,071	1,157	198
Cambridge	81,513	82,996	164,509	33,112	1,218	267
Chester	193,089	202,211	395,300	73,390	5,845	523
Cornwall	164,451	176,818	341,269	65,641	4,956	928
Cumberland	86,206	91,706	177,912	34,444	2,369	199
Derby	135,639	136,563	272,202	52,910	2,484	441
Devon	252,752	280,979	533,731	94,637	6,117	893
Dorset	83,442	91,301	174,743	34,559	2,012	291
Durham	159,874	164,403	324,277	57,450	3,272	554
Essex	172,299	172,696	344,995	67,602	2,482	507
Gloucester	205,374	225,933	431,307	80,856	5,790	786
Hereford	57,257	57,181	114,438	23,461	1,429	123
Hertford	77,619	79,618	157,237	30,155	1,305	185
Huntingdon	29,154	29,545	58,699	11,897	373	65
Kent	272,415	275,746	548,161	95,547	5,013	809
Lancaster	814,857	852,207	1,667,064	239,166	23,604	3,831
Leicester	105,613	110,242	215,855	44,649	3,260	457
Lincoln	181,802	180,915	362,717	73,038	2,259	456
Middlesex	738,970	837,646	1,576,616	207,670	9,850	3,136
Monmouth	70,608	63,741	134,349	24,880	1,417	235
Norfolk	199,055	213,566	412,621	85,922	3,711	450
Northampton	98,886	100,175	199,061	40,903	1,674	295
Northumberland	121,271	128,997	250,268	48,704	3,051	442
Nottingham	121,660	128,113	249,773	50,531	2,749	216
Oxford	80,383	81,190	161,573	32,141	1,440	201
Rutland	10,743	10,597	21,340	4,297	120	31
Salop	119,357	119,657	239,014	47,203	2,093	298
Somerset	209,421	226,581	436,002	81,632	4,702	893
Southampton	174,724	180,216	354,940	66,589	3,274	505
Stafford	258,729	251,477	510,206	97,676	5,455	899
Suffolk	154,107	161,022	315,129	64,081	2,317	577
Surrey	278,186	304,427	582,613	95,375	3,948	1,210
Sussex	147,572	152,198	299,770	54,066	3,647	254
Warwick	195,967	206,154	402,121	81,445	6,899	667
Westmoreland	28,234	28,235	56,469	10,848	870	40
Wilts	128,904	131,103	260,007	50,986	2,149	255
Worcester	114,753	118,731	233,484	46,962	2,922	251
York (East Riding)	95,446	98,230	193,676	38,390	1,675	426
City of York and Ainsley	18,176	20,146	38,322	7,710	369	68
York (North Riding)	100,681	103,981	204,662	42,509	2,652	296
York (West Riding)	574,527	580,397	1,154,924	226,473	18,870	2,221
Total	7,321,875	7,673,633	14,995,508	2,753,295	162,756	25,882

WALES.

Counties.	Persons, 1841.			Houses, 1841.		
	Males.	Females.	Totals.	Inhabited.	Uninhabited.	Building.
Anglesey	24,369	26,521	50,890	11,488	746	135
Brecon	26,911	26,384	53,295	10,634	833	77
Cardigan	31,997	36,[illegible]83	68,[illegible]80	15,102	811	125
Carmarthen	50,795	55,687	106,482	23,407	1,382	225
Carnarvon	39,600	41,468	81,068	16,861	771	134
Denbigh	44,617	44,674	89,291	18,485	991	167
Flint	33,636	32,911	66,547	13,320	446	101
Glamorgan	89,028	8[illegible],434	1[illegible]3,462	33,205	1,466	538
Merioneth	19,247	19,991	39,238	8,467	547	72
Montgomery	34,252	31,968	66,220	13,650	884	33
Pembroke	40,343	47,919	88,262	18,882	1,022	143
Radnor	12,738	12,448	25,186	4,687	234	19
Total	447,533	463,788	911,321	188,196	10,133	1,769

SCOTLAND.

Counties.	Persons, 1841.			Houses, 1841.		
	Males.	Females	Totals.	Inhabited.	Uninhabited	Building.
Aberdeen	89,528	102,755	192,2[illegible]	32,193	1,095	2[illegible]8
Argyll	47,654	49,486	97,140	18,514	917	75
Ayr	78,970	85,552	164,522	30,247	1,297	69
Banff	23,425	2[illegible],[illegible]51	50,076	11,2[illegible]	478	83
Berwick	16,527	17,900	34,427	7,405	382	28
Bute	7,108	8,587	15,695	3,067	93	15
Caithness	16,993	19,204	36,197	6,962	214	53
Clackmannan	9,331	9,785	19,116	3,513	110	6
Dumbarton	22,505	21,790	44,295	7,986	372	101
Dumfries	34,097	38,728	72,825	14,375	724	51
Edinburgh	102,709	122,914	225,623	38,903	2,961	121
Elgin	16,071	18,923	34,994	8,173	330	59
Fife	65,735	74,575	140,310	28,965	1,502	135
Forfar	79,2[illegible]4	91,146	170,380	36,153	2,035	124
Haddington	17,253	18,528	35,781	8,009	759	29
Inverness	45,506	52,109	97,615	19,182	578	70
Kincardine	15,804	17,248	33,052	7,274	314	59
Kinross	4,194	4,569	8,763	1,806	114	16
Kirkcudbright, Stewartry of	18,838	22,261	41,099	8,150	316	22
Lanark	208,3[illegible]9	218,744	427,11[illegible]	80,531	3,964	863
Linlithgow	13,766	13,082	26,848	5,309	327	19
Nairn	4,556	5,367	9,923	2,596	109	18
Orkney and Shetland	26,464	33,543	60,007	11,426	247	32
Peebles	5,122	5,398	10,520	2,119	154	15
Perth	65,339	72,812	138,151	29,172	1,799	89
Renfrew	72,725	82,030	154,755	24,626	1,092	92
Ross and Cromarty	36,442	41,616	78,058	16,106	885	135
Roxburgh	21,957	24,105	46,062	8,674	345	38
Selkirk	3,972	4,017	7,989	1,446	76	4
Stirling	41,070	41,109	82,179	15,307	795	36
Sutherland	11,307	13,359	24,666	4,972	167	38
Wigtown	20,[illegible]24	23,6[illegible]4	44,[illegible]68	8,512	296	56
In Barracks	2,[illegible]32	993	4,[illegible]25	17	—	—
Total	1,24[illegible],427	1,382,5[illegible]0	2,628,957	503,[illegible]57	24,[illegible]67	2,760

COMPARATIVE SUMMARY of the HOUSES, Inhabited, Uninhabited, and Building, in Great Britain in 1801, 1811, 1821, 1831, and 1841.

		1801.	1811.	1821.	1831.	1841.
England	Inhabited	1,467,870	1,678,106	1,951,973	2,326,022	2,753,295
	Uninhabited	53,965	47,925	66,055	113,885	162,756
	Building	..	15,189	18,289	23,462	25,882
Wales	Inhabited	108,053	119,398	136,183	155,522	188,196
	Uninhabited	3,511	3,095	3,652	6,050	10,133
	Building	..	1,019	985	1,297	1,769
Total England and Wales	Inhabited	1,575,923	1,797,504	2,088,156	2,481,544	2,941,491
	Uninhabited	57,476	51,020	69,707	119,915	172,889
	Building	..	16,208	19,274	24,759	27,651
Scotland	Inhabited	294,553	304,093	341,474	369,393	503,357
	Uninhabited	9,537	11,329	12,657	12,719	24,307
	Building	..	2,341	2,405	2,568	2,760
Islands in the British Seas	Inhabited	..	..	13,763	15,658	19,159
	Uninhabited	..	..	427	697	865
	Building	..	..	98	226	220
Grand Total	Inhabited	1,870,476	2,101,597	2,443,393	2,866,595	3,464,007
	Uninhabited	67,013	62,349	82,791	133,331	198,061
	Building	..	18,549	21,777	27,553	30,631

Comparative Statement of the Population in 1801, 1811, 1821, 1831, and 1841, showing the Increase or Decrease in each County.

ENGLAND.

Counties.	1801.	1811.	1821.	1831.	1841.	Increase per Cent. 1801-11.	1811-21.	1821-31.	1831-41.
Bedford	63,393	70,213	83,716	95,483	107,937	11	19	14	13·
Berks	109,215	118,277	131,977	145,289	160,226	8	11	10	10·2
Buckingham	107,444	117,650	134,068	146,529	155,989	9	14	9	6·4
Cambridge	89,346	101,109	121,909	143,955	164,509	13	20	18	14·2
Chester	191,751	227,031	270 098	334,391	395,303	18	19	24	18·4
Cornwall	188,269	216,667	257,447	300,938	341,269	15	19	17	13·3
Cumberland	117,230	133,744	156,124	169,681	177,912	14	17	10	4·8
Derby	161,142	185,487	213,333	237,170	272,202	15	15	11	14·7
Devon	343,001	383,308	439,040	494,478	533,731	12	15	13	7·8
Dorset	115,319	124,693	144,499	159,252	174,743	8	16	10	9·7
Durham	160,361	177,625	207,673	253,910	324,277	11	17	22	27·2
Essex	226,437	252,473	289,424	317,507	344,995	11	15	10	8·6
Gloucester	250,809	285,514	335,843	387,019	431,307	12	18	15	11·4
Hereford	89,191	94,073	103,243	111,211	114,438	5	10	7	2·0
Hertford	97,577	111,654	129,714	143,341	157,237	14	16	10	9·6
Huntingdon	37,568	42,208	48,771	53,192	58,699	12	15	9	10·3
Kent	307,624	373,095	426,016	479,155	548,161	21	14	12	14·4
Lancaster	672,731	828,309	1,052,859	1,336,854	1,667,064	23	27	27	24·7
Leicester	130,081	150,419	174,571	197,003	215,855	16	16	13	9·5
Lincoln	208,557	237,891	283,058	317,465	362,717	14	19	12	11·1
Middlesex	818,129	953,276	1,144,531	1,358,330	1,576,616	17	20	19	16·
Monmouth	45,582	62,127	71,833	98,130	134,349	36	15	36	36·9
Norfolk	273,371	291,999	344,368	390,054	412,621	7	18	13	5·7
Northampton	131,757	141,353	162,483	179,336	199,061	7	15	10	10·9
Northumberland	157,101	172,161	198,965	222,912	250,268	9	15	12	12·2
Nottingham	140,350	162,900	186,876	225,327	249,773	16	15	20	10·8
Oxford	109,620	119,191	136,971	152,156	161,573	9	15	11	6·1
Rutland	16,356	16,380	18,487	19,385	21,340	..	13	5	10·
Salop	167,639	194,298	206,153	222,938	239,014	16	6	8	7·2
Somerset	273,750	303,180	355,314	404,200	436,002	12	17	13	7·9
Southampton	219,656	245,080	283,298	314,280	354,940	12	15¼	11	12·9
Stafford	239,153	295,153	345,895	410,512	510,206	21	17	19	24·2
Suffolk	210,431	234,211	270,542	296,317	315,129	11	15	9	6·3
Surrey	269,043	323,851	398,658	486,334	582,613	20	23	22	19·7
Sussex	159,311	190,083	233,019	272,340	299,770	19	22	17	10·0
Warwick	208,190	228,735	274,392	336,610	402,121	10	20	23	19·4
Westmoreland	41,617	45,922	51,359	55,041	56,469	10	12	7	2·5
Wilts	185,107	193,828	222,157	240,156	260,007	5	15	8	8·2
Worcester	139,333	160,546	184,424	211,365	233,484	15	15	15	10·4
York (East Riding)	110,992	134,437	154,010	168,891	193,876	16	14	10	14·6
City of York and Ainstey	24,393	27,304	30,451	35,362	34,322	12	12	17	8·3
York (North Riding)	158,225	160,301	187,452	190,756	204,662	7	11	2	7·2
York (West Riding)	565,282	653,042	801,274	976,350	1,154,924	16	22	22	18·2
England	8,331,434	9,538,827	11,261,437	13,091,005	14,995,508	14¼	17¼	16	14·5

WALES.

Counties.	1801.	1811.	1821.	1831.	1841.	Increase per Cent. 1801-11.	1811-21.	1821-31.	1831-41.
Anglesey	33,806	37,045	45,063	48,325	50,890	10	21	7	5·3
Brecon	31,633	37,735	43,603	47,763	53,295	19	16	10	11·5
Cardigan	42,956	50,260	57,784	64,780	68,380	17	15	10	5·5
Carmarthen	67,317	77,217	90,239	100,740	106,482	15	17	12	6·
Carnarvon	41,521	49,336	57,958	66,448	81,068	19	17	15	22·
Denbigh	60 352	64,240	76,511	83,629	89,291	6	19	8	6·7
Flint	39,622	46,518	53,784	60,012	66,547	17	15	11	10·8
Glamorgan	71,525	85,067	101,737	126,612	173,462	18	19	24	37·
Merioneth	27,500	30,924	34,382	35,315	39,238	4	11	3	11·1
Montgomery	47,978	51,931	59,899	66,482	69,220	8	15	9	4·1
Pembroke	56,280	60,615	74,009	81,425	88,262	7	22	9	7·9
Radnor	19,050	20,900	22,459	24,651	25,186	9	7	9	2·1
Wales	541,546	611,788	717,438	806,182	911,321	13	17	12	13·

SCOTLAND.

Counties.	1801.	1811.	1821.	1831.	1841.	Increase per Cent. 1801-11.	1811-21.	1821-31.	1831-41.
Aberdeen	123,082	135,075	155,387	177,657	192,283	10	15	14	8·2
Argyll	71,859	85,585	97,316	100,973	97,140	19	14	4	3·9*
Ayr	84,306	103,954	127,299	145,055	164,522	23	22	14	13·4
Banff	35 807	36,668	43,561	48,604	50,076	2	19	12	3·
Berwick	30,621	30,779	33,385	34,048	34,427	1	8	2	1·1
Bute	11,791	12,033	13,797	14,151	15,695	2	15	3	10·9
Caithness	22,609	23,419	30,238	34,529	36,197	4	29	14	4·8
Clackmannan	10,858	12,010	13,263	14,729	19,116	11	10	11	29·7
Dumbarton	20,710	24,189	27,317	33,211	44,295	17	13	22	33·3
Dumfries	54,597	62,960	70,878	73,770	72,825	15	13	4	1·3*
Edinburgh	122,954	148,607	191,514	219,645	225,623	21	29	15	2·8
Elgin	26,705	28,108	31,162	34,231	34,994	5	11	10	2·2
Fife	93,743	101,272	114,556	128,839	140,310	2	13	12	8·9
Forfar	99,127	107,264	113,430	139,606	170,380	8	6	13	22·
Haddington	29,986	31,164	35,127	36,145	35,781	4	13	3	1·*
Inverness	74,292	78,336	90,157	94,797	97,615	5	12	5	3·
Kincardine	26,349	27,439	29,118	31,431	33,052	4	6	8	5·1
Kinross	6,725	7,245	7,762	9,072	8,763	8	7	17	3·5*
Kirkcudbright	29,211	33,684	38,903	40,590	41,099	15	15	4	1·2
Lanark	146,699	191,752	244,387	316,819	427,113	31	27	30	34·8
Linlithgow	17,844	19,451	22,685	23,291	26,848	9	17	3	15·2
Nairn	8,259	8,251	9,006	9,354	9,923	..	9	4	6·
Orkney and Shetland	46,824	46,153	53,124	58,239	60,007	..	15	10	3·
Peebles	8,735	9,935	10,046	10,578	10,520	14	1	5	5·*
Perth	126,366	135,093	139,050	142,894	138,151	7	3	3	3.4*
Renfrew	78,056	92,596	112,175	133,443	154,755	19	21	19	15·9
Ross and Cromarty	55,343	60,853	68,828	74,820	78,058	10	13	9	4·3
Roxburgh	33,682	37,230	40,892	43,663	46,062	11	10	7	5·4
Selkirk	5,070	5,889	6,637	6,833	7,989	16	13	2	16·9
Stirling	50,825	58,174	65,376	72,621	82,179	14	12	11	13·1
Sutherland	23,117	23,629	23,840	25,518	24,666	2	..	7	3·4*
Wigtown	22,918	26,891	33,240	36,258	44,068	17	2..	9	21·5
In Barracks	..	..	..	..	4,425	..	..	..	..
Scotland	1,599,068	1,805,688	2,093,456	2,365,114	2,628,957	14	16	13	11·1

* Decrease.

Comparative Summary of the **Population** in 1801, 1811, 1821, 1831, and 1841, of England, Wales, Scotland, and the Islands in the British Seas, with the Totals and Rate of Increase per Cent.

	1801.	Increase per Cent.	1811.	Increase per Cent.	1821.	Increase per Cent.	1831.	Increase per Cent., 1841.	1841.
England	8,331,434	14¼	9,538,827	17¼	11,261,437	16	13,091,005	14·5	14,995,508
Wales	541,546	13	611,788	17	717,438	12	806,182	13·	911,321
Persons travelling at Night, June 6	..	..	..	..	..	..	..	..	4,896
England and Wales	8,872,980	14	10,150,615	17	11,978,875	16	13,897,187	14·5	15,911,725
Scotland	1,599,068	14	1,805,688	16	2,093,456	13	2,365,114	11·1	2,628,957
Islands in the British Seas	..	..	..	..	89,508	15·8	103,710	19·6	124,079
Total	..	..	..	..	14,161,839	..	16,366,011	14·	18,664,761



[The Tinkhell.]

"Through heather, mosse, mongst frogs, and bogs and fogs,
'Mongst craggy cliffes, and thunder-battered hills,
Hares, hinds, bucks, roes, are chas'd by men and dogs."
Taylor's *Sonnet*.

TAYLOR'S PENNYLESS PILGRIMAGE.

[Concluded from page 485.]

The Water-poet proceeds to Dunfermline. He goes also to see Sir George Bruce's coal-mine, of which he speaks in terms which may sound somewhat extravagant in the present day. The Castle of Stirling he compares to Windsor for situation; and the hall surpasses all the halls he ever saw. From Stirling he rode to St. Johnston (Perth), where his host told him that the Earl of Mar and Sir William Murray were gone to the great hunting at "the Brea of Mar." The Londoner's surprise when he gets into the land of mountains is highly amusing. "Shooter's Hill, Gadshill, Highgate Hill, Hampstead Hill, are but mole-hills in comparison." But in the midst of these mountains he saw a sight that was well worth his journey from London. He was in the midst of a goodly company of Highland chieftains, bearing the honoured names of Erskine, Stuart, Gordon, Murray, with hundreds of other knights, esquires, and their followers. The modern deer-drives, such as are described by Mr. Scrope in his delightful book on Deer-Stalking, are small matters compared with the mighty hunt at which the Water-poet was present. He tells his story well; and we will not injure it by curtailment:—"For once in the year, which is the whole month of August, and sometimes part of September, many of the nobility and gentry of the kingdom (for their pleasure) do come into those Highland countries to hunt, where they do conform themselves to the habit of the Highlandmen, who for the most part speak nothing but Irish; and in former time were those people which were called the Red-shanks. Their habit is shoes with but one sole a-piece; stockings (which they call short-hose) made of a warm stuff of divers colours, which they call tartan; as for breeches, many of them, nor their forefathers, never wore any, but a jerkin of the same stuff that their hose is of, their garters being bands or wreaths of hay or straw, with a plaid about their shoulders, which is a mantle of divers colours, much finer and lighter stuff than their hose, with blue flat caps on their heads, a handkerchief knit with two knots about their neck; and thus are they attired. Now

their weapons are long bows and forked arrows, swords and targets, harquebusses, muskets, dirks, and Lochaber axes. With these arms I found many of them armed for the hunting. As for attire, any man of what degree soever that comes amongst them, must not disdain to wear it; for if they do, they will disdain to hunt, or willingly to bring in their dogs: but if men be kind unto them, and be in their habit, then are they conquered with kindness, and the sport will be plentiful. This was the reason that I found so many noblemen and gentlemen in those shapes. But to proceed to the hunting.

"My good Lord of Mar having put me into that shape, I rode with him from his house, where I saw the ruins of an old castle, called the Castle of Kindroghit. It was built by King Malcolm Canmore (for a hunting house), who reigned in Scotland when Edward the Confessor, Harold, and Norman William reigned in England: I speak of it because it was the last house that I saw in those parts; for I was the space of twelve days after, before I saw either house, corn-field, or habitation of any creature, but deer, wild horses, wolves, and such like creatures, which made me doubt that I should never have seen a house again.

"Thus the first day we travelled eight miles, where there were small cottages, built on purpose to lodge in, which they call 'lanquhards.' I thank my good Lord Erskine, he commanded that I should always be lodged in his lodging, the kitchen being always on the side of a bank, many kettles and pots boiling, and many spits turning and winding, with great variety of cheer, as venison baked, sodden, roast, and stewed beef, mutton, goats, kid, hares, fresh salmon, pigeons, hens, capons, chickens, partridge, moorcoots, heathcocks, caperkellies, and termagants (ptarmigan); good ale, sack, white, and claret, tent (or allegant), with most potent aqua-vitæ.

"All these, and more than these, we had continually in superfluous abundance, caught by falconers, fowlers, fishers, and brought by my lord's tenants and purveyors to victual our camp, which consisteth of fourteen or fifteen men and horses. The manner of the hunting is this: five or six hundred men do rise early in the morning, and they do disperse themselves divers ways; and seven, eight, or ten miles compass, they do bring or chase in the deer in many herds (two, three, or four hundred in a herd) to such or such a place as the noblemen shall appoint them; then when the day is come, the lords and gentlemen of their companies do ride or go to the said places, sometimes wading up to the middle through bourns and rivers: and then they being come to the place, do lie down on the ground till those foresaid scouts, which are called the Tinkhell, do bring down the deer. But as the proverb says of a bad cook, so these Tinkhell men do lick their own fingers; for besides their bows and arrows, which they carry with them, we can hear now then a harquebuss or a musket go off, which they do seldom discharge in vain. Then after we had stayed there three hours or thereabouts, we might perceive the deer appear on the hills round about us (their heads making a show like a wood), which being followed close by the Tinkhell, are chased down into the valley where we lay; then all the valley on each side being way-laid with a hundred couple of strong Irish greyhounds, they are let loose as occasion serves upon the herd of deer, that with dogs, guns, arrows, dirks, and daggers, in the space of two hours, four score fat deer were slain, which after are disposed of some one way, and some another, twenty and thirty miles, and more than enough left for us to make merry withal at our rendezvous."

The sport was so exciting to the pilgrim, that he produced two sonnets on the occasion, one of which, at least, does no discredit to his versifying abilities. But the best part of the sport for Taylor, with all his poetical sympathy, is clearly the eating and drinking which accompanies it—"such baking, boiling, roasting, and stewing." The scene is altogether most exhilarating; and "after supper a fire of fir-wood as high as an indifferent May-pole." But his welcome, when the hunting was over, in fair and stately houses, was as congenial as the banquets of the field. At Ballo Castle there were threescore dishes at one board; with a train of footmen and horses daily feeding that must have exhausted the land like an invading army. His whole stay in the Highlands was five and thirty days; and at length he returned to Edinburgh, where, he says, "I stayed eight days to recover myself of falls and bruises which I received in my travel in the Highland mountainous hunting." At Leith he meets his "long approved and assured good friend Master Benjamin Jonson;" and it is delightful to have it recorded that the fine generous old dramatist gave his humble brother "a piece of gold of two and twenty shillings to drink his health in England." The pilgrim took a less wearisome mode in his progress back to London. He was invited by one of his Scotch friends to ride in his company, and to be provided by him with everything on the road. The waterman was, no doubt, a most amusing fellow, full of quaint and original observation, as his book shows him to be; or he might have fared worse, in spite of the hospitality of that age. We conclude with his general description of the hospitality of Scotland, which is as curious and withal as pleasant a picture of the old times as it has been our fortune to meet with. We do not remember to have seen any reference to the more remarkable passages in the 'Pennyless Pilgrimage,' by any recent author. Probably Scott was familiar with it; but if so, we think he would have mentioned the deer-hunt and the description of old house-keeping.

"I am sure that in Scotland, beyond Edinburgh, I have been at houses like castles for building; the master of the house, his beaver being his blue bonnet, one that will wear no other shirts but of the flax that grows on his own ground, and of his wife's, daughters', or servants' spinning; that hath his stockings, hose, and jerkin of the wool off his own sheep's backs; that never (by his pride of apparel) caused mercer, draper, silkman, embroiderer, or haberdasher to break and turn bankrupt: and yet this plain homespun fellow keeps and maintains thirty, forty, fifty servants, or perhaps more, every day relieving three or four score poor people at his gate; and besides all this, can give noble entertainment for four or five days together to five or six earls and lords, besides knights, gentlemen, and their followers, if they be three or four hundred men and horse of them, where they shall not only feed, but feast, and not feast, but banquet: this is a man that desires to know nothing so much as his duty to God and his king, whose greatest cares are to practise the works of piety, charity, and hospitality: he never studies the consuming art of fashionless fashions; he never tries his strength to bear four or five hundred acres on his back at once; his legs are always at liberty, not being fettered with golden garters and manacled with artificial roses, whose weight (sometime) is the reliques of some decayed lordship. Many of these worthy housekeepers there are in Scotland; amongst some of them I was entertained; from whence I did truly gather these aforesaid observations."

The return of the Water-poet to London is characteristic of the man and of the age. The reluctance with which he goes back to his business exhibits much of the ease of mind which belongs not to our days of inveterate competition. He sneaks into London, after being absent three months, to a house within Moorgate, where he borrows money; and then returns to

his inn at Islington, where he jovially stays two more days, on the last of which his friends come out to meet him, thinking he had just returned from his pilgrimage. "With all love I was entertained with much good cheer; and after supper we had a play of the 'Life and Death of Guy of Warwick,' played by the Right Honourable the Earl of Derby his men."

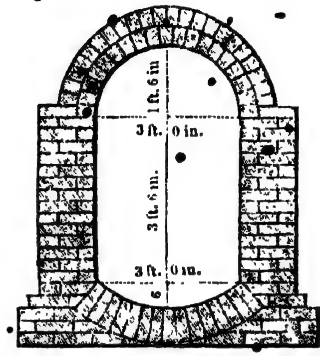
SEWERS.

[Concluded from page 463.]

While such facts as the foregoing show that much has been done of late years in extending the benefits of underground drainage, there are still many densely peopled districts, both in London and in some of the principal provincial towns of the kingdom, which are either entirely without sewers, or in which the sewage is extremely defective. The witnesses examined in 1840 by the Committee on the Health of Towns brought forward numerous instances of this kind, in which the worst effects were produced on the health and morals of the people by the contaminated atmosphere and the filthy condition of the houses in which they are compelled to live. A Report on the Sanitary State of the Labouring Classes, by Dr. Southwood Smith, expresses a very strong opinion as to the injurious effect of deficient drainage; and so intimate does that gentleman conceive its connection to be with the presence of disease, that he observed, in his evidence before the committee alluded to, "If you were to take a map and mark out the districts which are the constant seats of fever in London, as ascertained by the records of the Fever Hospital, and at the same time compare it with a map of the sewers of the metropolis, you would be able to mark out invariably, and with absolute certainty, where the sewers are, and where they are not, by observing where fever exists; so that we can always tell where the commissioners of sewers have not been at work by the track of a fever." For instances to bear out this assertion, the reader is referred to the evidence itself, in which many scenes are described that are too filthy and disgusting for repetition; and abundant proof is given that the evils complained of are as debasing to the character as they must be destructive to the health of the poorer classes; for, as remarked by Dr. Arnott, "where filth is unavoidable, it makes people careless of making a little addition to it; it does not shock their feelings as if all was clean."

As sewers are, from their peculiar situation and use, more difficult to examine and repair than many other structures of brickwork, while a defect may be productive of very serious injury before it attracts notice, it is especially desirable that they should be constructed in the most perfect and durable manner; while the necessity of providing for the passage of water from existing branches, and from such as may be constructed at a future time, requires great care in adjusting the dimensions, inclination, and level. All the sewers constructed by the metropolitan commissions of late years are of such dimensions as to allow a man to pass through them, for the purpose of inspecting or cleansing them. From a statement in the Appendix to the Report of the parliamentary committee of 1834, it appears that the smallest sewers in the City of London division are about four feet three inches high by two feet three inches wide, the dimensions being increased, according to circumstances, up to eight feet six inches by seven feet, which are the general dimensions of the new sewer from Moorfields to London Bridge, although at the mouth it is increased to ten feet by eight feet. The water brought down by the Fleet Ditch is conducted from Holborn Bridge by two sewers, from twelve to fourteen feet high, and six feet six inches wide, one on each side of Farringdon Street. These sewers unite, towards the mouth, into one passage about eighteen feet by twelve; and even that, the surveyor states, is sometimes insufficient to carry off the water. When a storm occurs at high-water, the quantity brought down by the Fleet Ditch will, he says, raise the water in the lower part of the sewer five feet almost instantaneously; and under such circumstances, the water has been occasionally forced up through the communicating drains, so as to flood the surface. In the district under the management of the Westminster commission, the common sewers are built of the form represented by the annexed transverse section, which represents, on a scale of a quarter of an inch to a foot, a sewer of the larger sort, the greatest height being five

Fig. 1.



feet six inches, and width three feet. Smaller sewers are made of the same form, but only five feet high, and two feet six inches wide. The regulations for building sewers, issued by the commissioners, require that the bricks used be "good, square, hard, sound, and well-burnt stock bricks, and be properly laid in well-compounded mortar, made of one part of good strong stone lime, and two parts of clean river sand; the workmanship to be of the best description, the bricks of each arch to be well bonded, and the bricks of the arch at the bottom of the sewer to be laid close at the top edge, and to an even curvature on the upper surface, bedded in mortar and grouted." It is further ordered that when Roman cement shall be used in the works, "it shall be of the best quality, and shall not be mixed with more than one-half of clean river sand." This form of sewer has been, we believe, generally adopted in London; but Mr. Roe, surveyor to the Holborn and Finsbury commission, who has introduced several important improvements in the construction and management of sewers, has suggested that it is a form not calculated to give the greatest strength, and states that

Fig. 2.

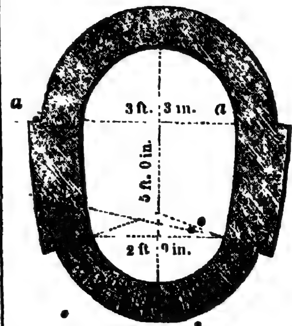
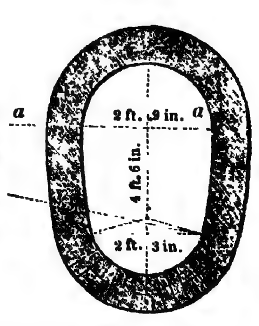


Fig. 3.



* The sides of these sewers form curves of large radius, struck from centres on the line *a a*; the radius for the larger size being about thirteen feet, and that of the smaller size in proportion.

in some cases the sides have given way to the pressure of the earth behind them. He therefore prefers an oval form, as represented in *Figs.* 2 and 3, which are copied from the regulations recently issued by the commissioners for the construction of new sewers and drains. These are drawn to the same scale as *Fig.* 1. The part in which the joints are marked in the cut is, according to the directions, to be worked in blocks with cement.

The regulations of this commission require that every main or leading sewer "which may receive the sewage from streets and places containing more than two hundred houses, shall be of an oval form, five feet in height, and three feet in width in the clear; the invert thereof to be worked one brick in substance, and the springing walls thereof to be worked one brick and a half in substance, and bonded, and the crown thereof one brick in substance, in two separate half-bricks," conformably with the transverse section copied in the preceding cut, *Fig.* 2. All branch sewers which may receive the sewage from streets containing less than two hundred houses, are required to be four feet six inches in height, and two feet six inches in width in the clear; the whole being worked one brick in substance, the bottom and springing walls being bonded, and the crown worked in two separate half-bricks. The section of this, which is called the second size, is represented in *Fig.* 3. Mr. Roe states, in the paper in which this new form of sewer is recommended, that its adoption would effect a saving of one shilling and sixpence per lineal foot in sewers of the first size. The expense of building sewers of course varies greatly, according to their depth and other contingent circumstances; but in 1834 (before Mr. Roe's improvements were introduced), the average cost of the larger sewers in the Holborn and Finsbury divisions was stated to be from twenty to twenty-five shillings per foot, and of the smaller sewers from twelve to fifteen shillings per foot. In the Tower Hamlets district, the ordinary dimensions, as stated to the committee of the House of Commons in 1834, are four feet six inches by three feet for the larger, and four feet by two feet six inches for the smaller sewers. The inverted arch which forms the bottom of a sewer, besides adding to its strength, is useful in increasing the force of the current, and enabling it to carry away the ponderous matter that would otherwise settle and choke up the sewer. In the evidence before the committee on the Health of Towns (p. 127), Mr. Newman, one of the surveyors of the Surrey division, stated that the badness of the soil in that district, and the existence of quicksands, increased the difficulty and expense of constructing the sewers, and rendered necessary the adoption of cast-iron bottoms.

The inclination of sewers must vary greatly in different districts, but should always, if possible, be sufficient to enable the water to run freely, and to carry off the solid matter that usually enters with it. The regulations of the Holborn and Finsbury commissioners require that the inclination "be not less than one-fourth of an inch to every ten feet in length, and as much more as circumstances will admit, in those portions that are in a straight line; and double that fall in portions that are curved." Those issued by the Westminster commission in 1836, state that the current required for sewers, in all cases, is one inch and a quarter to every ten feet in length;" but probably this has been ascertained to be a greater inclination than is necessary, as the more recent regulations order "that the current of all sewers to be built be regulated by the commissioners according to the surface required to be drained," without specifying any particular inclination. These also require that, where the situation will admit of ample fall and depth of sewer, there shall be at least three feet of depth between the upper part of the crown of the arch and the surface of the road. In some cases it is very difficult to obtain sufficient inclination in a sewer, and still to make it deep enough to drain the basement story of neighbouring houses, which may be readily conceived from the fact that some parts of London are below the level of high water. Considerable portions of the district comprised in the Surrey and Kent commission of sewers, by which the drainage of the whole of London south of the Thames is effected, are below that level; and the surveyor of the Tower Hamlets commission states that in some parts at Wapping the pavement is five feet below the high-water mark of the Thames. ('Report on Health of Towns,' p. 125.) The greater part of the district drained by the Blackwall or Poplar commission would be inundated but for the river walls: so that in this division the duties of the commissioners consist, as intimated by the old laws relating to sewers, as much in the maintenance of embankments as in making provision for drainage. To prevent the tide from entering sewers that drain low ground, it is necessary to close their lower ends with heavy flaps, which are opened by the attendants, or flap-keepers, at proper times, so as to allow free exit for the sewage at low-water. Wherever it is practicable, new sewers are built at a considerable depth from the surface. The depth of that in Watling Street, in the city of London, which is an extraordinary case, is from thirty-three to thirty-five feet. Some difficulty not unfrequently occurs in crowded districts, where deep and capacious sewers are especially needed, owing to the danger attending their construction. In many cases, particularly in the older streets of the city, it is necessary to shore up the houses by a massive frame-work of timber, to prevent their falling while the sewer is in progress; and in some instances it has been considered unadvisable, solely on this account, to attempt their construction, even where they were much needed. The want of sewers in some parts of London obliges the inhabitants to use force-pumps to relieve their cesspools, a practice which, besides being very expensive, is injurious to health, as the filthy water so pumped out runs along the open gutters until it reaches a gully-hole. This operation is performed at night, by which the evil is rendered less apparent; and it has been proposed, in some cases, to lay an iron pipe beneath the foot pavement to carry off the water so pumped out, that it might not run on the surface.

It is highly desirable, where a sewer must deviate from a straight line of direction, to effect such deviation by means of regular curves; and also to make branch sewers enter the main line by a curved instead of an angular junction. Mr. Roe ascertained, by experiment, that the time occupied in the passage of an equal quantity of water along similar lengths of sewer with equal falls, was as follows:—

Along a straight line . .	90 seconds.
With a true curve . .	100 ,,
With a turn at right angles .	140 ,,

It is therefore evident that the occurrence of angular or ill-formed turns in a sewer must have a similar effect to diminishing its capacity, as such parts of the sewer will not pass so much water as the straight parts; and it also has the disadvantage of occasioning the deposition, in the form of sediment, of matter that would otherwise pass off with the water. This evil may be met by giving a greater fall to curved than to straight portions of the sewer. The new regulations of the Holborn and Finsbury commissioners, in which the improvements of Mr. Roe are embodied, require that the curves in sewers passing from one street to another, or where a turn is required, shall be formed

with a radius of not less than twenty feet, and that the inclination or fall shall be increased at the junction.

Where private drains are to be laid into a sewer for the purpose of draining houses, it is necessary that the lowest pavement or floor of the building be at least four feet above the level of the sewer, measuring to the bottom of the side-wall, or commencement of the invert; because the house would otherwise be liable to be flooded with water from the sewer, when unusually full. The regulations for private drains, issued by the Westminster commission, require that the bottoms of such drains shall be twelve inches above the bottom of the sewer with which they are intended to communicate, and recommend that they have a fall of at least a quarter of an inch in a foot. This fall, in a length of sixty feet, amounts to fifteen inches, by adding to which thirteen inches for the height of the drain and brick arch over it, eight inches for the depth of ground and paving over the upper end of the drain, and twelve inches between its lower end and the bottom of the sewer, we obtain the necessary total fall of four feet. The Holborn and Finsbury commissioners require a space of two feet between the bottom of the drain and the bottom of the sewer; but the total difference of level between the sewer and the basement floor is only two inches greater than that mentioned above; the prescribed fall being only a quarter of an inch in a yard, or five inches in a length of sixty feet. To prevent injury to the sewers, it is always required that the brick rings at the junctions of private drains, and about three feet of the drains themselves, shall be made by the commissioners; a fixed price being paid to them by the individual for whom the drain is constructed. The metropolitan commissioners of sewers are required to furnish builders, on application, with information as to the lowest level to which they can supply the means of drainage; but, under the present state of the law, they have no power to prevent the excavation of ground for buildings, or the formation of cesspools, to a greater depth than can be drained by the sewers; although they may refuse permission for the construction of private drains opening into the sewer in such cases. The disinclination evinced by many proprietors of houses to avail themselves of the facilities offered by the construction of new sewers, for improving the drainage of their property, is truly surprising, and shows how imperfectly the advantages of good sewerage are appreciated. A remarkable case was mentioned to the Committee on the Health of Towns, in which a new sewer nearly a mile and a half long had been made, in the parish of Camberwell, on the urgent application of the inhabitants, and yet only one application had been made for a private drain in the whole distance. Drains leading from private houses are usually of a circular form, and nine inches in diameter, though some are of greater size. In this, as in almost every other point of detail, the various metropolitan commissions are far from being uniform. While the Holborn and Finsbury commissioners will not allow, except in special cases, a private drain of more than nine inches in diameter, those for the Tower Hamlets allow nothing under twelve inches, and admit drains of fifteen or even eighteen inches diameter.

The construction of gully-holes and shoots for conducting the surface drainage of the streets into the sewers, and a variety of other matters, vary considerably in the different commissions. It has been usual in all, until very recently, to make apertures or *man-holes* at convenient distances, to enable persons, when necessary, to enter and cleanse the sewers. In the regulations of the Westminster commission, it is ordered that these apertures be formed at or near to every intersection of the sewers, and also that they be at distances not exceeding one hundred and eighty feet from each other. They are built in the form of oblong shafts of brickwork, up to within about eighteen inches of the surface of the road, and covered with cast-iron plates, over which the roadway is made good. The inconvenience attending the use of these apertures, in order to open which it is necessary to break up the carriage-way, might be avoided by the general adoption of side-entrances, which form an important feature of the improved system now being introduced in the Holborn and Finsbury commission. These are passages extending from the side of the sewer to the foot-pavement, through which they may at any time be entered by unlocking and opening a cover or trap-door, consisting of pieces of flag-stone mounted in an iron frame. When a person enters the sewer by one of these openings, the cover is held open by a self-acting catch, and an iron-grating, which admits light and air, rises into its place, and serves to prevent any passenger from accidentally falling in. It is proposed in some cases to combine the side-entrances with the gully-holes, by which some expense may be saved. The advantages of an easy access to the sewers at all times are very great; and the positive saving of expense by the adoption of this system is expected, as appears from the Report in which it is recommended, to be considerable.

The last-mentioned improvement is intimately connected with another, which promises to be of great value—a method of cleansing sewers by using water in *flushes*. A great quantity of solid matter enters the sewers with the water which they are intended to carry off; and as their current is usually very trifling, it is deposited in the form of a sediment. This takes place especially at the points of junction of branch sewers, gullies, and private drains; and it has often happened that the deposit has gone on accumulating until it has reached the level of the private drains, the consequent choking up of which has given the first intimation of the state of the main sewer. Besides the injurious effect of this accumulation of filth upon the health of persons residing near the sewer, such a state of things is productive of great expense, it being sometimes necessary to break up the road, and open and rebuild both the sewer and, occasionally, the drains opening into it. But the evil does not rest here; for it has been a common practice to spread the deposit of filth on the surface, instead of carting it away, whereby its noxious effluvia have become productive of disease to the neighbourhood. Although in general the current of water in the sewers is not sufficiently rapid to carry off this solid matter, Mr. Roe, conceiving that it might be made so by damming it up, and then letting it off in flushes, tried a series of experiments on the velocity of water in sewers when dammed up to various heights, by which he found that he could, by a head of water varying from ten inches to four feet, obtain a velocity of from thirty to eighty-six inches per second. The power of running water is stated to be such, that a velocity of three inches per second is sufficient to enable a current of water to tear up fine clay; and that a stream running at the rate of three feet per second will tear up beds of loose stones of the size of an egg. It is therefore evident that, by a moderate head of water in a sewer, a current may be produced of sufficient force to tear up and carry away a considerable deposit of sedimentary matter. The average annual deposit is stated to be nearly an inch and a half in thickness—a quantity which might be readily removed by flushing once a year only; but far better by repeating the operation, as it is proposed to do, three or four times in a year, which will prevent its ever accumulating in considerable quantity. To show the effect of the operation in practice, we quote the particulars of three experiments, from a report presented by Mr. Roe to the commissioners:—

1st Experiment. Water backed up 70 feet; head, 13 inches: quantity, 26 hogsheads; which, when let off, cleared away rather more than 1½ inch of deposit from 370 feet of sewer, having a fall of a quarter of an inch in each ten feet, and being the whole length that needed cleansing.

2nd. Head of water, 18½ inches; quantity, 45 hogsheads; cleared away 1½ inch of deposit from 300 feet of sewer; part of the bottom on a dead level.

3rd. Head of water, 10 inches; quantity, 20 hogsheads; deposit heavy; flush cleared away 1½ inch from 330 feet of sewer.

The necessary head of water is produced by simply accumulating the ordinary contents of the sewer, which may be done either by a cast-iron gate, fitting closely to a frame-work built into the sewer, and rising to the height that the head is required to be, or by a drop plank or gate of the same material, sliding up and down in nearly vertical grooves. In either case the apparatus may be managed, by means of the side entrances before alluded to, with the greatest facility. The drop plank may, it is stated, be drawn up in two seconds and a half, and the gate may be thrown open in less than one second; and, as the height of each head is regulated by the level of the private drains near it, no injury is done if the water rise to the top of the gate, so as to run over it, before the attendant is ready to let it off; so that one person is enabled to set a number of stop-gates, and return to let them off in succession. In the report alluded to, Mr. Roe gives a detailed calculation to prove the superior economy of this plan of cleansing, and concludes his recommendation of it by observing "that irrespective of any saving to be effected by flushing the sewers with water, he considers that the prevention of a large quantity of foul deposit from remaining in a state of fermentation for years together beneath the streets, and the consequent removal of a great cause of offensive effluvia, together with avoidance of large quantities of slop being laid out on the surface (as is the case in the ordinary mode of cleansing), would be benefits of such worth as to warrant the utmost use of stop-planks and water for keeping sewers free from deposit." The ordinary run of water in the sewers has hitherto been found sufficient for the purpose; but in case of its proving otherwise, a supply of water for flushing might be readily procured from the water companies.—*Penny Cyclopædia.*

THE SIROCCO OF THE MEDITERRANEAN.

THE islands situated near the southern extremity of Italy, especially Sicily and Corfu, are frequently visited by a wind of a remarkable character, to which the name of Sirocco, Scirocco, or Schirocco, has been applied. It blows from a point of the compass a little to the southward of south-east, and therefore not far distant from south.

Sicily appears to be the spot where this wind is experienced in its greatest force. Brydone has given a vivid description of the effects produced by it; and although he has been accused of distorting the truth in other matters, yet the observations of more recent travellers seem to confirm his remarks concerning the Sirocco. Brydone describes this wind, as experienced by him at Palermo in Sicily, as being singularly heating, relaxing, and oppressive in its effects; not much unlike the subterranean sweating-stoves at Naples, but hotter. In a few minutes, those who are exposed to it find every fibre relaxed in a strange degree, and the pores are opened in such a manner as to lead to the expectation of a profuse perspiration. The thermometer rises to a great height, but the air is generally thick and heavy. It seldom lasts more than thirty or forty hours at one time; but during that period the people confine themselves within doors; the windows and doors are shut close, to prevent as much as possible the external air from entering; and where window-shutters are wanting, the inmates hang up wet cloths in the inside of the window. In the better sort of houses, servants are employed in sprinkling water through all the apartments to cool the air. Notwithstanding the scorching heat of the sirocco, it is seldom known to produce any epidemical disorder in Sicily, or to do any injury to the health of the people; they feel indeed very weak and relaxed after it; but a few hours of the *tramontane*, or north wind, which generally succeeds it, soon braces them up again, and restores them to their former state.

There are peculiar circumstances attending this wind, which have led some persons to identify it with a scorching wind experienced on the opposite coast of Africa, situated at no great distance from Sicily. On this point Dr. Benza, an Italian physician, states:—"When the sirocco has been impetuous and violent, and followed by a shower of rain (as is almost always the case), the rain has carried with it to the ground an almost impalpable red micaceous sand, which I have collected in large quantities more than once in Sicily. This sand fell abundantly at Palermo in 1811; and in March, 1819, when I was on a visit to my friends, it fell in such a quantity in the interior of the island, that I collected more than three ounces of it. The appearance of this sand is quite different from what is found either in Sicily or Malta; and I see nothing paradoxical in admitting (seeing its impalpable state, and the short distance it has to travel) that it has been carried over from Africa by the violence of the wind, and, when this ceased, to have fallen down with the rain."

When we direct our attention to the island of Corfu, situated some distance eastward of Sicily, we find the sirocco assuming a somewhat different character. When compared with the sirocco of Sicily, and particularly of that part of the island where Palermo is situated, the more eastern sirocco might be called a refreshing breeze; yet it is accompanied with other circumstances which make it more deleterious to the human frame, especially in reference to the moisture with which, unlike the Sicilian sirocco, it is loaded. All winds blowing between south and east have, in these islands, more or less of the sirocco character; but the genuine or *black* sirocco (as it is called) blows from a point between south-east and south-south-east; and of this sirocco, as experienced at Corfu, Dr. Hennen ('Medical Topography of the Mediterranean') states the characteristics to be as follows:—Without affecting the thermometer or barometer in any remarkable degree, the sirocco almost invariably gives the sensation of burning heat and oppression at the chest, accompanied with languor and a propensity to perspire with the slightest exertion. Almost every individual is more or less sensible to these effects; some, who have felt them but slightly on their first arrival, have become exquisitely sensible to them after some time; many can foretel the approach of a sirocco some hours before it begins to blow, by the peculiarities of their feelings; and there are few indeed who cannot at once decide that this wind has commenced without making any reference to external objects; but it is by the sick and the weakly convalescent that its depressing effects are most severely experienced. It has been particularly remarked that wounds and diseases of the skin generally deteriorate during the prevalence of a sirocco; and also, that if vaccination or inoculation be performed at this period, they are extremely liable to fail; and indeed if they succeed, the progress of the pustule is often suspended, ten or twelve days often elapsing before it reaches that state commonly attained in six or eight.

Dr. Hennen remarks, "That the southerly wind in general, and this modification of it in particular, is unfavourable to the health and spirits of man, is an opinion upon which all classes of persons with whom I have conversed throughout the Mediterranean are unanimous. All the ancient physicians who have written upon Mediterranean diseases, from Hippocrates downwards, give their testimony to the same effect, and speak of the pestilential nature of the southerly wind as perfectly familiar."

The sirocco of Corfu produces many curious effects in relation to the domestic and other arrangements of the Corfiotes. Bakers diminish the quantity of their leaven during the sirocco, as dough is found to ferment sufficiently without it. No carpenter uses glue in the sirocco, for it does not adhere. No painter willingly exercises his vocation at this period, for his paint will not dry; indeed the natives assert that if paint, applied during a sirocco, *does* happen to dry by intense heat and a change of wind, it always oozes again on the return of the sirocco; and Dr. Hennen once found that paint, applied to some articles of his own at this period, remained for three months as wet as when it was first applied. The walls of houses, stone floors, and pavements invariably become moist when the sirocco blows. The stone floors in the town of Corfu are sometimes absolutely wet at this time, without any rain having fallen; and gentlemen who have made hygrometrical experiments state that the instrument has frequently fallen from ten to twenty degrees during the prevalence of this wind. Although this sirocco, unlike that of Sicily, is so charged with moisture, yet vegetables, especially that part of them exposed to its action for any length of time, appear quite shrivelled and burnt up, and very frequently they are destroyed altogether.. Wine, bottled during a sirocco, is greatly injured and often destroyed. Meat taints uncommonly soon during its prevalence; and a prudent housekeeper never salts meat at this time, for it either becomes tainted at once, from not receiving the salt, or else it keeps very badly.

Several theories have been promulgated as to the cause of the phenomena connected with this wind, but at present the subject is surrounded with so many difficulties, that any certain conclusions cannot yet be safely made. The phenomena must be closely examined by accurate observers, in different places, at different times, and in different modes, before materials for grounding a correct explanation can be found.

CHAUCER'S PORTRAIT GALLERY.

THE WIFE OF BATH.

The masculine character of "this fair but not bashful pilgrim," as Mr. Todd calls the Wife of Bath, is happily shown by the artist of the drawing in the Sutherland manuscript, who represents her, like the prioress and the nun, on horseback; but not, like them, riding in the modern way. At the same time he has remembered she *was* fair, and accordingly represented her with a very winning countenance, which is finally set off by her remarkably large and broad black hat. Her wimple is not unlike what we should call a mob-cap. Her fote-mantel, or outer petticoat, is blue, and is bound round the hips by a golden girdle, from which it falls over her feet, so as to hide the scarlet "hosen." One of her spurs alone is there visible. The stirrup of her saddle is gilded, and she holds in her hand a whip. From such a picture our reader will expect an original of some wealth and consequence; and the Wife of Bath, as Chaucer has described her, will not disappoint them:

"A good wife was there of besidé Bath;
But she was somdel deaf, and that was scathe*;
Of cloth-making she had such a haunt†,
She passéd them of Ipres and of Ghent.
In all the parish, wife ne was there none
That to the off'ring before her shouldé gone;
And if there did, certain so wroth was she,
That she was out of alle charity.
Her coverchiefs weren full five of grund:
I durste swear they weigheden a pound,
That on a Sunday were upon her head.
Her hosen were of fine scarlet red,
Full strait ytied, and shoon full moist‡ and new:
Bold was her face, and fair, and red of hue.
She was a worthy woman all her live:
Husbands at the church-door had she had five,
Withouten other company in youth;
But thereof needeth not to speak as nouthe§.
And thriés had she been at Jerusalem.
She hadde passéd many a strange stream.
At Romé she had been, and at Bologne,
In Galice at St. James, and at Cologne;
She coulde much of wand'ring by the way.
Gat-toothed was she soothly for to say.
Upon an ambler easily she sat,
Ywimpled well||, and on her head a hat
As broad as is a buckler or a targe.
A fote-mantel¶ about her hippes large,
And on her feet a pair of spurres sharp.
In fellowship well could she laugh and carp**.
Of remedies of love she knew perchance."

Bath, we need scarcely observe, was formerly very famous for its cloth manufacture. The cloth chiefly made in England at this early period was of a coarse kind, which was produced in sufficient quantity to export: the finer cloths it was usual to import, chiefly from Flanders. In 1261 an attempt was made by Henry III. to prevent the exportation of English wool, and to cause cloth of English manufacture alone to be used in this country, but with little success. Soon after this, a scarcity of woad for the purposes of dyeing occurred, and the unusual spectacle of persons of rank and wealth dressed in cloth of the natural colour of the wool was seen about the streets of our large towns. The great baron Simon de Montford professed to be an admirer of this simplicity in dress, and was accustomed to maintain that foreign commerce was unnecessary. His conqueror Edward I. appears to have had similar views, and to have adopted very vexatious modes of carrying them into effect; such, for instance, as issuing an order that all foreign merchants should sell their goods within forty days after their arrival.

In Chaucer's lifetime, Edward III. made an equally petty and annoying regulation, when he insisted upon a prescribed measure being adopted for all foreign cloths wherever made, and directed his "aulnagers" to seize for his use all those that should be found of different dimensions. From the little trait of her character given in the lines referring to her want of charity, if any of her female neighbours ventured to take precedence in going to "offerings" and other assemblages, we may be sure the Wife of Bath would look with no very favourable eyes on these foreign interlopers; indebted though she was, in common with all of her trade, to a couple of foreigners for the great extension of the English woollen manufacture which took place in the early part of the fourteenth century. Edward III. having made most advantageous offers to foreign cloth-workers and others, two weavers from

* Hurtful or bad. † Custom.

‡ Fresh. In the Manciple's prologue we have the word used in a similar sense to distinguish fresh from old ale.

§ Now. || Well covered about the neck with her wimple.

¶ Supposed to be a sort of riding petticoat.

** Talk or prattle.

Brabant came over in 1331, and settled at York. By their superior skill, and by their willingness to communicate what they knew to others, a great impulse was given to native talent and industry.

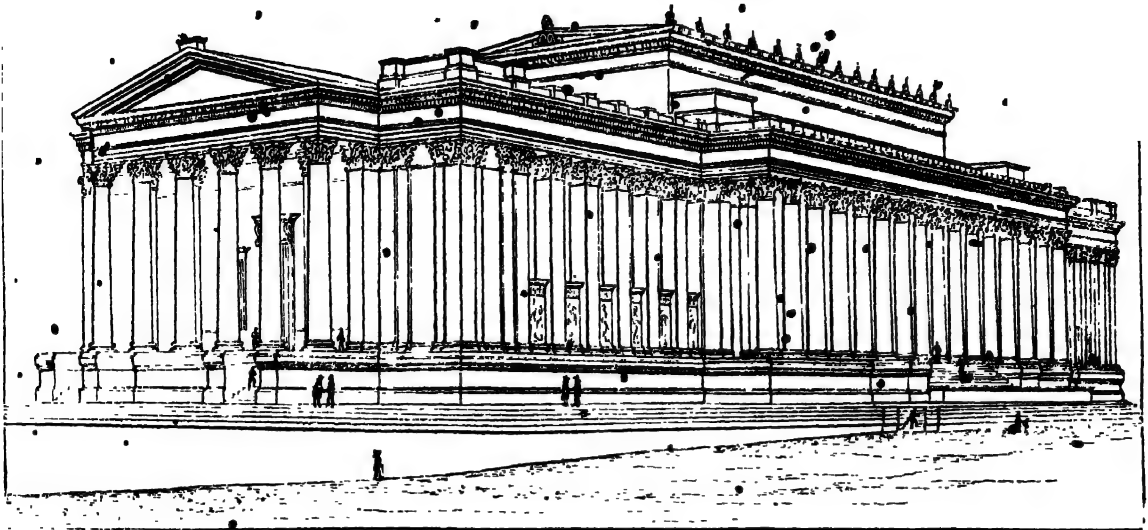
In mentioning the number of husbands the Wife of Bath has had, the poet incidentally refers to a curious old marriage custom. Formerly the bride and bridegroom stayed at the church porch during the earlier portion of the ceremony; and it was not till the clergyman reached the part which is now followed by his going up to the altar and repeating the psalm, that they entered the sacred edifice. "At the southern entrance of Norwich cathedral," says Warton, "a representation of the espousals, or sacrament of marriage, is carved in stone;" for here the hands of the couple were joined by the priest, and great part of the service performed. Here also the bride was endowed with what was called Dos ad ostium ecclesiæ. This ceremony is exhibited in a curious old picture engraved by Mr. Walpole, where King Henry VII. is married to his queen, standing at the façade or western portal of a magnificent Gothic church. The entire form of matrimony also, as celebrated at the church door, is described in certain Missals referring respectively to the cathedrals of Hereford and Salisbury.

We commenced the present series with some observations showing the comparative ease with which the difficulties attending the study of the works of the great Morning Star of our poetry might be overcome; and we trust our readers have partially, at least, experienced their truth. In dismissing the subject from our pages, we would once again impress upon all those whom Chaucer's wit, or humour, or marvellous delineation of manners and character, have delighted, and perhaps for the first time, that he cannot be thoroughly appreciated or enjoyed in any other dress than his own, and that there is really no sufficient reason for desiring that he should be. We have before given the testimony of the poet's admirable biographer Godwin to this effect; we now fortify our position still further with the evidence of the eminent historian of English poetry, Warton; whose remarks generally will be found deserving attentive consideration. With these we conclude:—

"Spenser copied the language of most of the elder English poets, but not without distinction; Chaucer was the source from whence he confessedly drew the largest draughts of the well of English undefiled. I cannot dismiss this section without a wish, that this neglected author, whom Spenser proposed as the pattern of his style, and to whom he is indebted for many noble inventions, should be more universally studied. This is at least what one might expect in an age of research and curiosity. Chaucer is regarded rather as an old, than a good poet. We look upon his poems as venerable relics, not as beautiful compositions; as pieces better calculated to gratify the antiquarian than the critic. He abounds not only in strokes of humour, which is commonly supposed to be his sole talent, but in pathos and sublimity not unworthy a more refined age. His old manners, his romantic arguments, his wildness of painting, his simplicity and antiquity of expression, transport us into some fairy region, and are all highly pleasing to the imagination. It is true that his uncouth and unfamiliar language disgusts and deters many readers; but the principal reason of his being so little known and so seldom taken in hand, is the convenient opportunity of reading him with pleasure and facility in modern imitations. For when translations, as such imitations from Chaucer may be justly called, at length become substituted as the means of attaining a knowledge of any difficult and ancient author, the original not only begins to be neglected and excluded as less easy, but also to be despised as less ornamental and elegant. Thus the public taste becomes imperceptibly vitiated, while the genuine model is superseded, and gradually gives way to the establishment of a more specious, but false, resemblance. Thus, many readers, happy to find the readiest accommodation for their indolence and illiteracy, think themselves sufficient masters of Homer from Pope's translation; and thus, by an indiscreet comparison, Pope's translation is commonly preferred to the Grecian text, in proportion as the former is furnished with more frequent and shining metaphors, more lively descriptions, and in general appears to be more full and florid, more elaborate and various."—Warton's *Essay on Spenser's Fairy Queen.*



[Portrait of Chaucer.]



[St. George's Hall and New Assize Courts, Liverpool.]

PUBLIC IMPROVEMENTS. 1841.

The progress of the New Houses of Parliament is now likely to excite more general interest. The building begins to show itself, at least in the east wing, forming the Speaker's residence, at the end next Westminster Bridge; which, though comparatively a very small portion of the whole, would of itself form a noble piece of architecture—a fine specimen of the style adopted. This, and the corresponding wing to the west, together with the whole of the river front, are carried up to the height of the top of the first-floor windows, and far surpass any idea that can be derived from drawings. Of the Bolsover stone, the species here used, the texture and colour are admirable, and with tints passing off from ochre to a bright silvery grey. No less admirable is the execution of the masonry, and the skill shown in the workmanship of all the ornamental details. Several large panels, each consisting of a single stone carved with a coat of arms in bold relief, are intended to be placed between the lower and upper windows of the two principal floors, and will represent the arms of all the English sovereigns, to Queen Victoria inclusive.

Of the other important structure now erecting in the metropolis, the Royal Exchange, everything preparatory to the rearing of the superstructure has been done. The exterior of the building, with the exception of the socle, or stylobate (which is to be of granite), will be of Portland stone, of the best quality, and carefully selected at the quarries, it being found that this stone varies much as to excellence and durability according to the beds from which it is procured. Of the Nelson Column in Trafalgar-square, as yet only the pedestal is erected. The idea of improving the interior of Guildhall by a new ceiling, or open timber-work roof, has been abandoned for the present. A very desirable improvement would be a new front to be substituted for the present one, more especially as it terminates one of the most favourable vistas in the metropolis for architectural display.

The widening of Cateaton-street, by taking down and rebuilding the houses on the north side, and the widening of the south end of Bartholomew-lane will add greatly to the public convenience. In Threadneedle-street a very spacious structure is in progress, on the site of what was once the French Protestant Church, where, in clearing away the old foundations, a fine Roman tessellated pavement was discovered, which is now deposited in the British Museum. The building in question will be one of the most striking and costly decorated specimens of architecture in the metropolis, and the upper part of the front will be enriched with a bas-relief, 73 feet in length, with figures of the size of life. The destination of this edifice is at present unknown.

The necessity of affording protection to foot-passengers at the end of Prince's-street, near the Bank, where several lines of street meet, has induced the Common Council to resolve upon erecting at their own expense a statue of William IV., protected from carriages by cannons fixed into the ground as posts. The entire monument, if it may be so called, will be forty feet in height from the level of the pavement, the statue itself being fourteen feet. Instead of adopting the usual pedestal form, the architect has imparted some novelty to his design by making it circular, and dividing it into three parts or stages, each successively diminishing in diameter. The diameter of the lower socle will be 21 feet, or rather more than half the entire height, so that the whole will have a striking pyramidal effect, and appear very firmly based. Immediately around the pedestal will be four others, rising to about half its height, and square in plan, contrasting with the larger circular mass: they are intended to support gas-lamps.

Not the least important public improvement and embellishment of the east end of the town, will be the Victoria Park, for which 100,000*l*. has been voted by Parliament. Its extent will be about 290 acres, or rather more than the area of St. James's Park; and it will be bounded on the west by the Regent's Canal, on the south by Sir George Ducket's Canal, and on the north by Grove-street Lane. As it is proposed that it shall be skirted on the south by terraces or ranges of houses, and that there shall also be detached villas, a superior neighbourhood will be created in that district.

Similar places of recreation are spoken off for the boroughs of Lambeth and Finsbury.

A very extensive pile of building is in progress at the south-west corner of Wandsworth Common, on ninety-six acres of land purchased by the county of Surrey for the site of a lunatic asylum. The design is of the latest Tudor period, and the façade, which is 535 feet in length, consists of three principal masses, namely a centre and two wings, the latter 310 feet apart and projecting 85 feet. The middle portion or body between those advanced parts is subdivided into three others, that in the centre being distinguished from the other two not only by its greater loftiness, but by being brought forward, although not so much as the extremities. Other parts of the design, which we need not detail in this place, contribute towards diversity of outline; the general combination giving a certain degree of lively variety and picturesque richness, and the whole having an air of cheerfulness and comfort. The number of patients for whom accommodation is provided is three hundred, and the entire cost of the building will be about £63,000.

Leaving the metropolis and directing our attention to the architectural improvements which are in progress in the country, we have first to notice the new building erecting at Liverpool, of which we have given a perspective sketch at the head of this notice. The order adopted for St. George's Hall and the Assize Courts is Corinthian, continued throughout, and arranged so as to produce a very rich *polystyle* composition, possessing more than an ordinary degree of variety and contrast. The eastern façade, or the longer side of the building, is 420 feet, or only 38 less than that of the National Gallery, and much loftier, the columns being 45 feet high and 4 feet 6 inches in diameter. The south front, which, owing to the great fall of the ground at the end of the site (about 16 feet), has the appearance of being raised upon a terrace, and thereby acquires both additional dignity and picturesque effect, consists chiefly of an hexastyle monoprostyle portico, recessed within so as to make its entire depth 24 feet. The columns are raised upon a stylobate 10 feet high, and continued along the other fronts, and the height from the ground-line to the apex of the pediment is 95 feet, which is only 6 or 7 less than that of the dome of the National Gallery. This front alone would constitute an imposing piece of architecture—and is upon a scale greatly surpassing anything of the kind yet erected in the metropolis,—yet it appears little more than a subordinate portion of the whole when compared with the eastern façade. Independently of its beauties of design, this latter has the merit of clearly expressing the general internal arrangement of the plan: the advanced or monoprostyle colonnade in the centre is 200 feet in length, and, being recessed, forms within an ample sheltered ambulatory 26 feet in depth; this corresponds with St. George's Hall, which comes in between the two Assize Courts, and defines itself externally in the composition by being carried up higher than the rest. This division of the front consists of 15 intercolumns, and the one on either side of it of 5 more. The architect has placed here square pillars, between which an ornamental screen is carried up below, while the upper part of their shafts is insulated; thus a double contrast is produced, first between the columns and the square pillars, next in respect to the closed and open spaces between the latter. The north front presents a projecting hemicycle, in which the order is continued in attached columns; a very agreeable variety is thus produced, and the view of the building from the north-east differs considerably from that from the south-east given in our cut. The northern portion of the plan will form a concert-room, and it makes the entire extent from north to south, including the steps leading up to the south portico, 500 feet. Taking into account its unusual altitude, this structure will in point of magnitude alone have very few rivals in the kingdom.

As regards the interior, St. George's Hall, measuring 161 by 75 feet, and 75 high, will be further extended along the upper part of its sides by a series of recesses 13 feet deep, apparently obtained out of the thickness of the walls, but in reality coming over the corridors which surround this part of the interior, and both separate it from, and connect it with, the two Law Courts. On the west side of the hall the light will be admitted laterally through windows within those recesses, and on the opposite one through small domes, one in each recess. During the assizes this spacious hall will be opened to the public as the approach to both the courts. At other times it will be appropriated, at the discretion of the council, to public or private meetings. The two courts, which are lighted from above, are similar in size, viz. 60 by 50 feet, and 35 high; and the concert-room at the north end of the building is 75 feet from east to west, and of the same extent in the other direction, measured through the spacious hemicycle on its north side. The other principal apartments are also of large dimensions.

The Liverpool Collegiate Institution, in the Tudor style, has three distinct elevations, of which the west or principal one faces Shaw-street. The first stone was laid, October 22, 1840, by Lord Stanley, with an inscription upon it purporting that the institution is for "the education of the commercial, trading, and



[Liverpool Collegiate Institution.]

working classes, in accordance with the doctrines and principles of the Church of England." The façade is a uniform composition, 280 feet in extent, collegiate in its aspect, and consistently decorated throughout. The lofty oriel windows carried up through two stories acquire additional effect in consequence of there being no windows below them on the ground-floor, a circumstance that gives solidity and repose to the angles of the structure. The elevation contains three tiers of windows, those of the two upper floors being combined together into a general composition producing the effect of a single range of lofty windows. The apartments on the ground-floor are 14 feet high, and consist of six school-rooms (two 25×20 feet, two 40×25, and two 50×25), dining-rooms, and keepers'-rooms, besides vestibules, waiting-rooms, and others of a subordinate nature. On the first-floor are—the board-room, secretary's room, nine school-rooms (two 50×25, three 40×25, and four 25×20), lecturers' room, laboratory, &c., all 17 feet high. On the second are nine school-rooms, all 14 feet high. The theatre, which is an octagonal building affording seats for two thousand persons, communicates with both the first and second floors, and behind it is a spacious music-room capable of being thrown open to or shut off from it at pleasure. There is besides a third or attic floor, containing several spacious rooms, lighted from the roof, intended to serve as a museum, rooms for drawing, &c., and a sculpture gallery, which last is 115 feet in length. The material used for the building is red-sandstone from the neighbourhood; and the works were contracted for at 21,379*l*.

At Oxford several architectural works are in progress, or have been completed. A new building, in the Tudor collegiate style, containing fellows' apartments, has been added to University College, at the west end of the front towards High-street, on the site of some old tenements. The Taylor and Randolph Institute is now proceeding rapidly. The Taylor building, or east wing, will contain the curator's residence, six lecture-rooms, and a library 40 feet cube. The Randolph building, comprising the centre and other wing, will be appropriated almost entirely to galleries, those for sculpture below, and those for paintings on the upper floor. The Protestant Memorial, in imitation of the Eleanor Cross at Waltham, has been commenced. The neighbouring church of Saint Mary Magdalen has been considerably altered. The north aisle, now distinguished by the name of the Martyrs' Aisle, has been rebuilt and enlarged, in the style of the 'early decorated,' with the view of thereby making it harmonize better with the 'Memorial;' but this attention to congruity between the two distinct objects has occasioned the disregard of it in the church itself; for the south aisle, which has lately been carefully restored, is in the later decorated style.

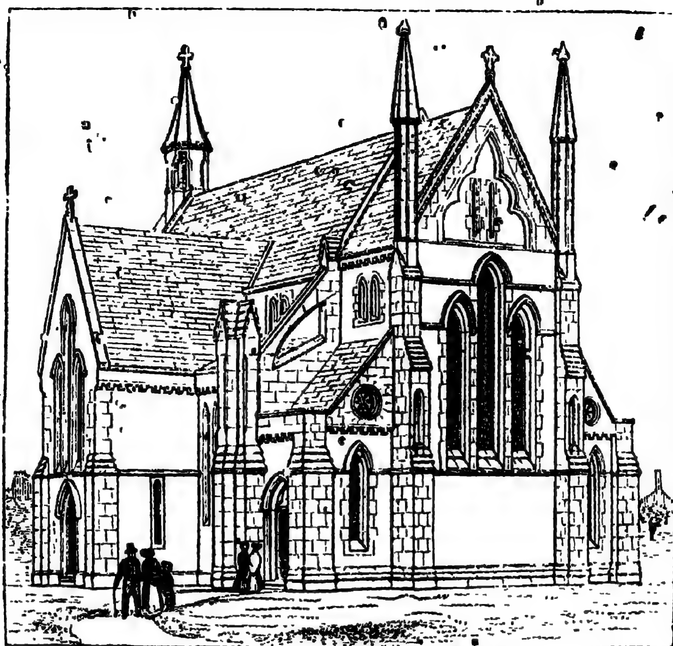
There has been erected at Ilam, in Staffordshire, to the memory of Mrs. Watts Russell, of Ilam Hall, a singularly elegant Gothic structure, resembling in its general character the *Eleanor Crosses*, without being a direct imitation of any one of them.

The Twenty-first Annual Report of the Church Commissioners shows that 23 churches have been completed within the elapsed twelvemonth, providing accommodation for 21,636 persons, of which one-half, or 10,933 sittings, are free. Thus altogether, 281 churches and chapels have been erected, affording sittings for 349,889 persons, of which 193,412 are free seats. Unfortunately, among the three hundred new structures of this class erected under the authority of the commissioners, there are very few that claim notice on account of their architecture, or are satisfactory in their design. Not a few of them, in fact, are decidedly the reverse, although for such defects limited funds afford no excuse, there being hundreds of examples all over the country, of churches which, though plain, are not mean; and which, though exceedingly homely in appearance, are certainly not vulgar. As one work of the kind, which is at least stamped by some originality of feeling and of design, we may instance the new church at Streatham. The architect, feeling that the proposed fund would be altogether insufficient for carrying into effect, upon the same scale, a design founded upon any of the modes belonging to our English Gothic, were it to be properly and consistently treated, has here adopted one which has enabled him to confer unity of expression upon the whole of his fabric, to make it all of a piece, and to make the exterior and interior perfectly correspond with each other. Though simple almost to severity, nothing is omitted that the design obviously demanded. The church forms a simple parallelogram, and the monotony that might arise from this uniformity of plan is counteracted by the campanile being made to project from the south east angle. This campanile is 15 feet square, and 85 high, or, measured to the summit, 113. The decoration elsewhere adopted in the church is resorted to both in the upper part of the campanile and in its spire, which last shows an inlay surface of red and white brick forming a chevron pattern on it. The altar recess is semi-circular, covered with a semi-dome, and lighted by seven windows, three of which will be filled with rich painted glass, representing the Transfiguration.

St. Mary's church, in St. George's parish, Southwark, also shows a sound discretion in not attempting too much, but endeavouring to produce effect rather by form than by decoration. The architect has accordingly omitted the usual appendage of a steeple or tower, and, contenting himself with placing a small bell-turret over the gable of the west end, has compensated for the plainness of the design in other respects by variety of outline. The style adopted is early English, with high-pitched roof and gable, and the plan (86 feet in length internally) cruciform, owing to which, and to the transepts being somewhat lower than the body of the church, considerable variety is given to the whole exterior. The east end will be faced with flint-work.

St. Chad's, Birmingham, is remarkable for the splendour of the interior, not as regards architecture only, but also the decorations peculiar to Roman Catholic worship. The front is 70 feet wide, and may be described as divided by buttresses into three compartments, the centre one containing the entrance, with a spacious window over it, and gable above, whose apex is about 80 feet from the ground; and each of the others, as having a very lofty window, above which they are carried up as towers flanking the gable, and having two belfry-windows on each of their sides. These towers rise 85 feet, and are surmounted with spires, making the total height of those parts 150 feet; and they and some other parts of the composition partake more of the Continental than of our own English Gothic.

The interior, which is cruciform in plan, consists of nave, side aisles, transept, choir, and two lateral chapels. There is no clerestory, but the pillars and arches supported by them are carried up to the roof open, all the braces of which are carved, and the principal rafters, tie-beams, and other framing, dressed and chamfered. The surfaces between the rafters are coloured blue; and it is intended to enrich both them and other parts of the roof, the spandrils, arches, and walls, with painting and diapering. Against one of the great pillars at the junction of the nave and transept, to the right hand on entering, is the pulpit, a magnificent specimen of oak carving, originally belonging to a church in Belgium, whence it was pur



[St. Mary's Church, Old Kent Road, Southwark.]

chased and presented to this building by the Earl of Shrewsbury. It is hexagonal in plan, and four of the sides are enriched with foliage and tabernacle work. The choir is divided from the nave and transept by a rich screen of open work 18 feet high, and consisting of seven arches, of which the larger one in the centre forms a doorway, closed with folding gates, and the whole is surmounted by tracery, canopies, and images, and by a parapet of rich open panels, forming the front of the gallery or rood-loft over the screen, and from which rises (to the height of 50 feet from the floor) the great rood or crucifix, with an image of the Saviour of the size of life. On either side of the choir beyond this magnificent screen is a range of ancient carved stalls of elaborate design, the workmanship of the fourteenth century, brought from Cologne; and immediately over them are screens of panel-work, surmounted by perforated tracery. Beyond these stalls are three sedilla for the officiating priest, deacon, and sub-deacon, copied from the niches forming what is called Sebert's tomb, on the south side of the choir at Westminster Abbey. Opposite these sedilla is the bishop's throne, a work of elaborate design and masterly execution, brought from the same church as the stalls. There is besides a *lectorium* of solid brass, the gift of the Earl of Shrewsbury, and formerly belonging to the cathedral of Louvain. The stained glass of the three windows over the altar has been principally copied from the examples at Bristol and Tewkesbury, and was presented by the noble donor just mentioned. The altar itself, and its accompaniments, are not at all inferior in splendour or costliness to the other ornaments of the church: around the altar are placed four pillars, 13 feet high, each composed of four large and four lesser shafts, with foliated caps, the smaller shafts surmounted by images coloured and gilded, and the others by figures of angels bearing candlesticks. The Lady-Chapel on the gospel side of the altar (or to the left on entering the church) is enclosed from the transept by a carved oak screen, consisting of a doorway, and four compartments of open tracery, with gables, pinnacles, and canopies, surmounted by images. Within this chapel are an altar and altar-screen of stone, the latter of which is adorned with niches, figures, and sculptures, intended, when the funds shall permit, to be further embellished with colours and gilding. A font of elaborate design will also be erected at some future opportunity. As the building stands upon a declivity, the architect has availed himself of this circumstance to construct an undercroft or crypt beneath the whole of his edifice, not only as a place of sepulture, but for subterraneous chapels and chantries; and its solemnity is greatly increased by all the windows being filled with stained mosaic glass.

Annexed to this church is the residence of the bishop and officiating clergy, which is a good specimen of the style and character of similar structures in the fifteenth century. The bishop's sitting-rooms have oriel windows towards the street, partly filled with stained glass, and the fire-places are of carved stone. The public rooms consist of a library, chapel, dining-hall, and audience-room; the first of which has a timber ceiling springing from braces. Adjoining, and immediately communicating with that apartment, is the chapel, small but lofty, having a tracery window filled with stained glass over the altar, an altar-screen of stone, carved with rich tabernacle-work. A portion of the floor is laid with incrusted tiles, which have various ornamental devices. This chapel also contains some pictures of religious subjects by early German masters, presented by the Earl of Shrewsbury. The dining-hall, which has been built in strict imitation of an ancient refectory, has an open roof framed with massive timbers, and has at its lower end a screen with folding doors, communicating with the kitchen offices, and over it three figures of angels bearing the cross of St. Chad. At the other or upper end of this apartment is a raised dais, on the right hand of which is a bay-window filled with devices in stained glass, while above the dais is another window of three lights, which also contains several coats of arms, besides those of her present Majesty. The side windows also contain mottoes and devices in stained glass. The lower part of the walls is wainscoted and panelled, and the fire-place, which is very large, is entirely of carved stone The other rooms are quite plain.

A DAY AT A COACH-FACTORY.



[Coach-Makers' Loft.]

ACCORDING to the information of Stow, the business of *coach-making* arose more suddenly in England than has commonly been the case in the annals of our manufactures. "In the yeere 1564," says he, "Guylliam Boonen, a Dutchman, became the queene's coachmanne, and was the first that brought the use of coaches into England. And after a while, divers great ladies, with as great jealousie of the queene's displeasure, made them coaches, and rid in them up and downe the countries, to the great admiration of all the beholders; but then by little and little they grew usual among the nobilitie, and others of sort, and within twentie yeeres became a great trade of coach-making." The fashion gained a permanent footing, notwithstanding the opposition of watermen and chairmen, and the vituperation of Taylor, the 'water-poet,' who reviled the new-fashioned coach as a "great hypocrite, for it hath a cover for knavery, and curtains to vaile and shadow any wickedness. Besides, like a perpetual cheater, it wears two bootes and no spurs, sometime having two pair of legs to one boot, and oftentimes (against nature) it makes faire ladies weare the boote; and if you note, they are carried back to back, like people surprised by pyrats, to be tyed in that miserable manner, and thrown overboard into the sea. Moreover, it makes people imitate sea-crabs, in being drawn sideway, as they are when they sit in the boot of the coach; and it is a dangerous kinde of carriage for the commonwealth, if it be considered."

We shall attempt to convey to the reader some idea of the mode of constructing these "great hypocrites;" but that our account must be nothing more than a cursory glance will be evident when it is considered that the construction of a coach requires the aid of coach-body makers, carriage-makers, coach-smiths, coach-platers, coach-beaders, coach-carvers, coach-trimmers, coach-lace makers, coach-lamp makers, harness-makers, coach-wheelwrights, coach-painters, herald-painters, and various others whose occupations form more or less distinct branches of trade. The more prominent only of these can be here noticed.

Perhaps the simplest mode of viewing the construction of a coach is in reference to the materials used. These are principally timber, iron, plated metal, leather, paint, varnish, and woven materials. The main parts of a vehicle are constructed of wood, whether in relation to the body (the part in which the travellers are seated), the under frame-work, or the wheels. Iron is however used in considerable quantity, not only for the springs, but in almost every part of the vehicle, in order to enable the latter to bear the very severe strain to which it is subject. Plated metal is used principally for ornament, such as beadings, &c., in addition to its employment for handles, hinges, and various other small pieces of mechanism. Leather is used for covering the upper part of the body of the best coaches, for suspending the body in its supporting frame, for attaching the horses to the vehicle, and in a small degree for the internal trimmings of the coach. Paint and varnish are of course used for the customary purposes, in preserving and beautifying the surfaces of the wood and iron. Woven materials, such as carriage-lace, fine woollen-cloth, silk, &c., are employed in the internal decoration or 'trimming' of a coach.

It may now be asked whether these various operations are ever carried on under one roof, and by one establishment: or whether, in order to see the different

processes of coach-making, it would be necessary to visit as many different tradesmen as were enumerated in a former paragraph. No one establishment makes all the various parts of a coach; and great differences exist in the extent to which the connection of the branches is carried. Some of the smaller manufacturers merely put together the parts which have been procured ready made from other persons, while the larger firms embrace several different departments, whereby the parts of a coach are, for the most part, entirely made within one factory. We have hence thought it desirable to describe the operations of an establishment of the latter kind; and have been favoured by Messrs. Pearce and Countze, of Long Acre, with permission to select their factory for this purpose; a factory conducted on a large scale, and embracing a great number of departments.

We are not antiquarians enough to know whether Long Acre has, from the time of its formation, been a bazaar for coach-makers, but certain it is that at the present day coach-making operations form the most remarkable feature in that street. Out of about a hundred and forty houses which the street contains, more than fifty are occupied either by coachmakers, so designated, or by manufacturers of the lamps, fringe, harness, &c. for coaches. The firm which we have just named occupies two of these houses, together with a large range of back premises, adjacent to Cross Lane. We will rapidly glance through the factory before detailing the processes of manufacture.

The first portion of the premises is occupied, as in other factories of a similar kind, by finished carriages of various forms, such as coaches, chariots, phaetons, gigs, cabriolets, curricles, tilburys, &c. Behind this is an open court or quadrangle, to which entrance is obtained from Cross Lane, and from whence stairs and passages lead to the various rooms of the factory, which are seen on all four sides of the central court. Beyond this, still on a level with the ground, is a large ware-room or shop, into which the carriages are lowered when completed in the upper rooms. A trap-door of large size is seen overhead, from which descends an inclined wooden railroad or 'shoot,' for the lowering of the carriages, by the aid of tackle in the room above. Still farther towards the north, and extending to the narrow street called Brokers' Row, is the timber store-room, around which on every side are stored the mahogany, oak, ash, elm, deal, and other woods employed in the making of carriages. Most of this timber is kept here several years before use, in order to ensure its dryness; and it is cut into planks in saw-pits, with which this part of the premises is provided.

Returning nearer to the front of the building, we ascend a staircase which leads to the workshops and show-rooms on the first floor. At the head of the stairs is the 'harness department,' where the numerous traces, bands, straps, and other articles of leather for carriages are made. The middle of the room is filled with harness in a more or less prepared state; and around the room are small work-benches, each occupied by one man. All the harness required for the carriages is made within the building. Beyond the harness-workshop is a gallery or passage, lighted on one side by a row of windows, and lined on the other by glass cases filled with specimens of the more decorative parts of carriage furniture and harness. This gallery leads to the 'carriage show-loft, a very extensive room filled with carriages nearly in a finished state; it is occupied, as the name imports, principally as a show-room; but some parts of a carriage are fitted to their proper places in this room, and there are mechanical means for receiving carriages from the floor above, and lowering them to the floor below.

A door on the left-hand side of the 'show-loft' leads to the 'smith's shop,' a large square building of two stories, fitted up with every convenience for the manufacture of iron-work. Almost every particle of iron used in the construction of carriages by this firm is made within their own premises; axles, cranes, bars, stays, plates, bolts, and various other forms in which the metal is used, are made in this shop. The upper story is a 'filing and turning' shop, and the lower a 'forging' shop. The latter is provided with eight forges or furnaces, ranged conveniently round the sides; and near each forge is a gas-branch, together with anvils and the requisite utensils, for the working of the men in the evening as well as by day. All the iron and steel employed is brought in in the form of bars two or three inches wide; the former to be worked into axles, bolts, &c., and the latter into springs, which form a very important part of the fittings of a coach. When the various articles of steel and iron are brought to a certain stage in this lower shop, they are carried to the upper, where there are two or three powerful lathes for turning the metal, together with vices and benches at which men are engaged in filing and finishing the metal-work. The smiths and their assistants, of whom we saw between twenty and thirty in these two shops, form a class of workmen who can command higher wages than almost any other workers in iron.

The lower floor of the smith's shop communicates with a timber-loft, and the upper floor with the show-loft, into which we now return, and proceed up another flight of stairs to the next higher story of the factory. This story is occupied as the 'coach-making loft,' and is represented in our frontispiece. All the wood-work belonging to the coaches, the wheels and some smaller portions excepted, is fashioned and put together in this workshop; it is therefore the most important part of the factory. It extends perhaps eighty or ninety feet in length, and contains all the implements and arrangements for forming the wood-work of vehicles. Coaches, chariots, cabriolets, and other forms of vehicle, are seen in various parts of the shop or loft, and in various stages of progress. Work-benches are placed round the sides, on which the pieces of wood are fashioned and prepared; while the centre contains the carriages in progress.

Again we ascend to another story equal in size to the lower, and occupying the upper part of the building. This story is appropriated to two distinct workshops or lofts, the 'painting-loft' and the 'trimming-loft.' The former of these is nothing more than a large painting-shop, so far as regards the general arrangement. The coaches and other vehicles, in a certain stage of progress, are drawn up into this upper floor in order to be painted. In walking through this room we observed coaches undergoing the process of painting—others that of varnishing—others drying between the coats of paint or of varnish—others under the hands of the herald-painter. The 'trimming-loft,' on the same floor, is the room in which all the interior fittings of a coach are completed. Piles and rolls of morocco leather, of coach-lace, of silk, of broad-cloth, are lying around on benches and tables, and workmen are engaged in fitting the linings, cushions, fringes, and other interior decorations of private carriages.

After having quitted the main building of the factory, we cross the court-yard to the 'plater's loft.' This is a workshop in which many of the brass, steel, and plated articles belonging to a coach are either manufactured or else brought into a form fit for the coach-maker's use. It contains a 'drawing-bench,' for making the beading which is used so extensively at the edges of a coach, as well as other mechanical arrangements for working in metal.

It will thus be seen that the operations carried on within the walls of the factory are very varied, and

embrace the manufacture of articles differing totally in their materials and formation. Let us now proceed somewhat more into detail.

The first thing to be done in building a coach—as in building a house or a ship—is to draw the design, to display taste and invention in the plan and proportion, so as to combine comfort with elegance to the greatest possible degree. There must be an architect for a coach as well as for a house or a ship, and he is required to possess inventive ingenuity, as well as knowledge of geometrical forms. The working-drawing or design for a coach is sketched with chalk on a large smooth black board, and on the same scale as the vehicle to be constructed. The party for whom the coach is to be made has thus an opportunity of seeing the plan and proportions, and of suggesting alterations before practical operations are commenced. The elegance and costliness of a well-built private carriage render it quite as much an object of taste as of convenience; and thus the ingenuity of the coach-designer is constantly at work to devise improved forms and modes of arrangement in the various parts of a carriage. In addition to its elegance, too, a coach is constructed in a manner more and more conducive to the comfort of the inmates—a meed of praise which we cannot always give to the prevailing form of hats and coats, for the latter often teach us that fashion is an uncomfortable tyrant.

When the form and proportions are definitely arranged and clearly sketched on the board, a plan is adopted very similar to that observed in building a ship. The pattern of a ship (as we explained in the May 'Supplement') is drawn the full size, and a *mould* is formed of pieces of thin wood, adapted to all the chalk-marks in the sketch, and serving as guides to the shipwright in fashioning the hull of a ship. So it is with the coach-builder. He prepares a *mould* of a coach, that is, he places a series of thin pieces of wood to the chalk-marks on the board, shaping them in such a manner as to guide the saw and plane of the workmen hereafter. The chief reason for this similarity in the operation of the shipwright and the coach-builder, so far as regards the commencement of his operations, is found in the tortuous forms of the pieces of wood used in the structure. Without any further allusion to a ship, we may merely observe, that there is scarcely a right angle or a straight line throughout a coach. Curvatures of the most remarkable and complicated kind occur, which cannot be expressed in feet and inches; and thus it becomes necessary to have a type, a mould, a pattern of some kind or other, to transfer the required forms from the chalk sketch to the rough wood on which the workman is afterwards employed.

The sketch being formed, and the pattern-pieces prepared in conformity with it, the wood is selected fitted for the purpose. In the factory whose arrangements we have described above, there are two saw-pits—one for cutting wood in the 'round,' and the other for 'converting.' The 'round' is the technical appellation for wood just in the form in which it is cut, before being squared, and in this form a large quantity of timber is stowed away in the factory. The operations of the sawyer, by which the trees are cut into planks, are of the usual kind, and require no particular nicety.

When the wood is cut into planks, it is 'converted' in the other pit. This term (which is also used by shipwrights in an analogous manner) relates to the cutting of the planks into the required forms by means of the pattern-pieces, and requires much more taste and judgment; the rougher and larger pieces only are cut here, the smaller being shaped above-stairs. A word or two may here be said on the varieties of wood employed by the coach-builder. Ash is used very largely in the construction of coaches; the quality called 'hedgerow' ash is a tough fibrous wood, with which the principal parts of the frame-work of a coach are constructed; it is not liable to warp or twist, and thus becomes for many purposes a valuable kind of timber. Beech is a cheap kind of wood, never used by builders of the best coaches. Elm is employed for planking in those parts of the body of a coach requiring much strength, as also for the naves of wheels. Oak, in similar manner, is employed in various parts of coaches wherein strength and durability are required. Mahogany furnishes the material for the panels of the best coaches—those broad, smooth, and delicately-curved surfaces which form the most conspicuous part of the body of a coach. Spanish mahogany, which the cabinet-maker selects as the most beautiful for his purposes, is not so useful to the coach-builder as the kind called Honduras, on account of the unfitness of its curled and twisted grain to conform to the bending which coach-panels receive. Deal and a few other kind of timber are used to a limited extent in coaches; but ash and mahogany are the two principal kinds.

The proper timber being selected for the various parts of a coach, it is taken up to the coach-making loft, where the operation of the maker commences. It may be here stated that the term 'carriage' is used by the workman in a sense different from that commonly employed. We speak indifferently of a *coach* or a *carriage*; but the coach-builders apply the latter term only to the frame-work which lies beneath or around the body, and which serves both to support the body and to connect it with the wheels, pole, &c. Hence there are two classes of workmen employed, the one called 'body-makers,' and the other 'carriage-makers;' the one employed principally on delicate frame-work and panelling, the other on stouter masses of wood. Body-makers may be regarded as the principal artisans employed in a coach-factory. They are required to possess a practical knowledge of complicated geometrical forms, and a very accurate hand and eye. The body of a coach is first put into shape by a skeleton frame-work of ash, every piece of which is more or less curved in one direction or another, and sometimes in double curvature. The meeting edges of the various pieces of wood are seldom at right angles to the surface, and various methods of joining are thereby rendered necessary; in some parts glue, in others bolts, nails, or screws; and in others those kinds of joints known to workmen by the names of the tenon-and mortice joint, the lap-joint, and the groove. In forming the several pieces for the body of a coach, the workman makes constant use of the pattern or mould-pieces, by which he is guided in the curvatures given to the different parts. The actual working of the wood does not differ much from the operation of a joiner, planes and the customary joining tools being alike employed by each. Not only are the skeleton pieces of the frame-work jointed together with great nicety, but equal or even still greater care is required in preparing the grooves for the reception of the mahogany panels. The panels themselves are brought to the symmetrical and elegantly curved forms which they present, partly by the plane, and partly by the united action of heat and moisture. If a thin plank be wetted on one side and heated on the other, it will speedily become convex on the moistened side and concave on the other: and the workman is enabled to make these forms permanent.

The experience and tact requisite for this department of coach-building have the usual effect on the relation between master and workman; the latter can command a high rate of wages, as high, we believe, as from three to five guineas per week. Coach-body

makers, indeed, rank among the highest order of London artisans; the number of first-rate workmen in that branch is limited, and does not appear likely to increase in any great degree.

The reader will then understand that the *body* of a carriage, *i.e.* that part in which the sitters are placed, is made by a class of workmen different from those who make the under part of a carriage; that the wood of which the body is principally formed (in the larger and more important factories) is principally ash and mahogany; that the workman fashions the various pieces by the aid of a pattern-board, as in the process of ship-building: that the actual process of working the wood is a superior kind of joiner's work; and that the operations are conducted in that floor of the building called the 'coach-making loft.' While the body of a coach is thus in the process of formation, the other parts are being made by other sets of workmen; the 'carriage-makers' are employed on the complicated mechanism beneath the body; the smiths are preparing the numerous pieces of iron required in various parts of the coach, and the wheelwrights are making the wheels. Perhaps we may as well introduce in this place the few observations we have to offer on the subject of wheel-making. The business of a wheelwright is totally distinct from that of a coach-builder; no establishment of the latter kind, we believe, being in the habit of making the wheels for their own coaches. But although the operations of the wheelwright are thus not strictly connected with the title of this paper, yet we think it desirable to put our coach upon wheels before presenting it to the reader; and shall therefore briefly describe the operations of wheel-making as carried on at the extensive factory of Messrs. Curll and Glover, Sutton Street, Soho.

A coach-wheel is a remarkable instance of lightness combined with strength; and not less remarkable for the accuracy of hand and eye required in its construction. As a matter of principle, a large flat circular piece of wood, with a hole in the centre, would form a wheel; and in many countries forms the only kind of wheel used at the present day; but practice shows that a much smaller quantity of material is capable of being wrought into a wheel excelling not only in elegance, but also in durability, such rude productions. The essential parts of a modern wheel are the *nave*, the *spokes*, and the *felloes*, corresponding to the centre, the radii, and the circumference of a circle. The nave is a short block of wood, usually elm, forming the middle of the wheel, and pierced with a hole to receive the axle or axle-tree. The spokes are bars of oak, radiating from the nave at equal distances one from another, and extending to equal distances from the nave. The felloes are circular segments of ash, framed on the extremities of the spokes, and joined one to another so as to form a circle. To these parts must be added the *tire*, an iron hoop which binds all the felloes closely together.

The mass of elm intended for the nave is turned to the required dimensions and shape in a lathe, and is hollowed within to receive the axle. It is then fixed in a kind of groove, with its axis horizontal; and the mortices or holes are chiselled out, for the reception of the ends of the spokes. This is a nice and difficult operation, requiring a practised eye for its proper execution, on account of the peculiar direction in which the spokes radiate from the nave of a wheel. If we stand at a short distance behind a carriage, we shall perceive that the wheels are not flat, but that they are concave on the outer surface and convex on the inner; the lower spokes are nearly in a vertical position, while the upper spokes branch out at a considerable angle from the vertical. There are various reasons for this form, some of which relate to the strength of the vehicle, some to the increase of room for the body of the coach without increasing the width of the track of the wheels, and some to the preservation of the coach from splashing. The holes for the spokes have therefore to be chiselled in conformity with this 'dishing' of the wheel, as the conical form is called; and not only so, but half of the spokes are placed nearer to one end of the nave, and the other half to the other, for the sake of increasing the strength, and thus the holes have to be made at different parts of the nave's length.

The pieces of oak for the spokes are brought to the factory in lengths of about four feet, and are then shaped by hand to the light and elegant forms with which we are familiar. The lengths of the spokes must of course depend on the diameter of the wheel. The front wheels of a modern coach are from forty to forty-four inches in diameter; and the hind wheels from fifty to fifty-six inches. The front wheels have usually twelve spokes, and the hind wheels fourteen. A plane, the usual aid to a workman in giving a smooth surface to wood, cannot be employed in preparing the spokes, on account of the varying curvatures which they present; a small cutting tool called a 'spoke-shave' is the principal instrument employed. One end of each spoke is formed into a tenon to fit the mortice-hole in the nave; and the spokes are fixed by the operation of 'speeching,' or 'spoking,' represented in the annexed cut. The nave is placed in a kind of



socket at a short distance above the ground, in a part of the workshop where a cleft is made in the floor to receive the spokes as the nave is gradually turned round; and the spoke is then driven into the hole prepared for it, by repeated blows with a mallet. The spokes are partially shaped before being driven into the nave, and are finished afterwards.

The rim of a wheel is formed of several distinct pieces called *felloes*, each felloe being long enough to receive the ends of two spokes. The ash of which they are formed is brought to the factory in short roughly-curved pieces, and are afterwards shaped to the proper form and dimensions by means of pattern-boards and various cutting tools. When the felloes are formed, they are fixed firmly on a low bench, and four circular holes are drilled in each piece, two to receive the ends of the spokes, which are formed into cylindrical tenons, and two for joining the felloes end to end. For the latter purposes, short cylindrical pieces of oak, about three inches long, and called 'dowels,' are made, and being fitted to corresponding holes made in the ends

of the felloes, serve to unite them one to another. Wedges are inserted when required, and the whole become thus firmly combined in the form of a wheel.

But the piecemeal manner in which the circumference of the wheel is thus made up would ill qualify it for service, were not a strengthening hoop of iron fitted on. Formerly straps of iron, called 'strakes,' were applied to the surfaces of the felloes, covering the joints; but after a time an improved method came into use, which consists in the application of a solid iron-hoop, which is put on the wheel while hot, and by shrinking as it cools, forces the whole of the framing together into a firm body. The process of 'hooping' or 'tiring' a wheel is represented in the annexed cut. In an open court of



the wheel-factory is a circular flat iron-plate, placed in a horizontal position, with a vertical axis or stem rising from its centre. The wheel is placed down on this plate, the concave or 'dished' side downwards; the nave resting in a hole in the plate, and the wheel being fixed to the central stem. Immediately adjoining this circular plate is a small furnace adapted for the reception of the hoop or tire, which has been previously welded to the required size; and when the tire is brought to a proper heat, it is taken from the furnace, and by means of iron instruments fitted to the circumference of the wheel. The diameter of the tire is such that it would not fit on the wheel while cold, but being expanded by heat, it encompasses the wheel, and gradually clings tightly to it as it gets cold. To aid in this, two men beat the tire with powerful hammers, while the two others cool the iron by sprinkling it with water. Iron pins are subsequently driven through the tire and felloes, one on each side of every joint, the points being securely riveted inside the felloes. Iron hoops are also placed round the projecting parts of the nave, to enable it better to resist the strain to which it is subjected.

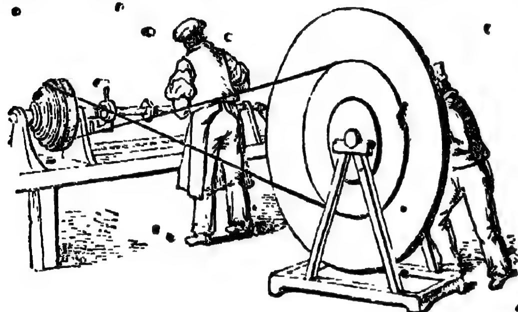
This brief notice will serve to convey some idea of the manufacture of the wheels of a coach. The process of painting them is one which we need not notice here; we shall therefore transfer our attention again to the coach-factory. The frame-work by which the body of a coach is connected with the wheels is, as we before observed, called the 'carriage,' and is the production of a class of workmen called 'carriage-makers.' These artisans are not required to produce such delicate work as the 'body-makers,' the masses of wood being much more heavy, and the joints fewer in number. Ash and elm are the principal kinds of wood which they use. It would be quite impossible, and, if possible, wholly uninteresting, to enumerate here all the various pieces of wood which constitute the frame-work of a carriage, some to connect the fore and aft wheels in pairs, some to connect the pairs of wheels together, some to support the body, others to support the coach-box, others again for the footman's standing-place behind, and others for the attachment of the horses to the coach. It is necessary to mention, however, one peculiarity in which a four-wheeled coach differs from many other forms of vehicle. In some coaches the body is connected with the under frame-work by pliable braces of leather attached to the springs; and in this case, the frame-work which supports the fore and hind springs is connected together by a long central piece of timber plated with iron, and called the 'perch.' An iron perch, called a 'crane-neck,' is sometimes used instead of a wooden one, and is shaped so as to enable the coach to turn somewhat more readily in a narrow street or road; an advantage which is however gained at the expense of greater weight of material.

As to the mode in which the carriage-makers proceed with their work, little need here be said. The planks and pieces of ash are roughly shaped by the saw, and are then worked to the proper contours, partly by planes, but much more by tools more or less resembling spoke-shaves.

We have before had occasion to notice the large quantity of iron-work prepared at the smith's shop in this factory. This iron is applied to various parts of a vehicle, and at different periods in the progress of the carriage towards completion. After the perch for a coach is made, and before it is fitted to the other parts of the framing, the smith takes it in hand, and fits side-plates of iron to it, for the sake of increasing the strength. In like manner many other parts of the vehicle, as soon as the wood-work is to a certain extent completed, are bound, hooped, or strengthened with iron in various different ways. All the iron for these purposes is forged out of small bars to a form nearly approaching that required, and is then either turned or filed to a regular surface. Where a perch is made entirely of iron, great muscular force is requisite in welding the different pieces into one mass. Indeed, both strength and skill are required in a coach-smith, for he has to work large and heavy bars of iron into forms containing several unequal curves, and varying greatly in thickness. There is a curious gradation of talent, and consequently of wages, observable in the operations of coach-smiths. There are the *forge men*, the *hammer-men*, and the *vice-men*, all earning different amounts of wages. A forge-man and a hammer-man generally work together, the latter being subordinate to the former, and indeed often paid by him. The forge-man is the responsible workman; he judges of the quality of the metal, regulates the curvatures, and exercises his skill in combining elegance with strength in the various iron-fittings required for the coach. The hammer-man aids him in his work, using the sledge-hammer under the direction of the forge-man, blows the bellows, keeps up the fire, and performs other offices subordinate to the labours of the forge-man. The wages of the forge-men are often from three to five guineas a week; but those of the hammer-men are very much lower in amount. The *vice-men* are those smiths whose work is at the vice instead of the anvil. They file and finish the various pieces of iron when forged, and prepare the iron for being fixed to the wood-work of the coach.

One of the most carefully executed parts of the iron-work of a modern coach is the *axle* or *axle-tree*. The axle is the piece of wood, or iron, which serves as a centre for the motion of the wheels. It was formerly made wholly of wood, and was then generally termed an axle-tree; but now that metal is frequently used instead of wood, the word 'axle' is more frequently used alone. Axles used formerly to be fixed firmly in the wheels, and to revolve beneath the vehicle; but now they are more frequently so made that each wheel revolves separately on them. The first iron axles introduced were of a rude construction, but successive

improvements have brought them to great perfection. The axle consists of three parts: the two *arms*, which pass into the naves of the wheels; and the *bed*, or central part, which connects the two arms together. At first, a hoop or ring was put within the hollow of the nave, to prevent the too rapid wear of the wood by the friction of the axle; but now the nave is lined with an accurately-fitted iron box, capable not only of receiving the axle with little friction, but also of containing a reservoir of lubricating oil. A modern construction, known by the manufacturers as Collinge's patent axle, is a very ingenious and complete application of this method. The box for placing within the nave of each wheel is first moulded in cast-iron, and then turned in a powerful lathe to a very beautiful degree of smoothness, especially on the inner surface, in which the axle will work. The factory to which our attention is directed contains the necessary arrangements for making these axles, as well as the other portions of iron-work. At one end of the 'filing-shop' is a large lathe, worked by one or two men at a wheel, as in the annexed cut.



The tools for turning the metal, as well as the general mechanism of the lathe, require considerable strength and power. In order to make the axle work more freely in the box, the inner surface of the latter is 'case-hardened,' that is, by a peculiar action of charcoal aided by heat the surface of the iron is to a small depth converted into steel, which, being harder than the original iron, is susceptible of receiving a finer surface, and of withstanding the wearing effects of friction.

The *springs* form another and very important part of the metal-work of a coach, and require a brief notice in this place. The object of a spring, whatever be the substance of which it is formed, is, by its elastic action between the wheels and the body of the coach, to diminish the concussion and irregular motion occasioned by the passage of the wheels over uneven ground. Leather might be used with a slightly elastic effect; wood is sometimes used in light one-horse vehicles; but iron or steel is the universal material for the springs of modern English coaches, and is generally applied in the form of elastic plates. The forms given to these steel springs are exceedingly varied, and contribute not a little to the general elegance of a coach. The earliest springs were formed of a single plate of steel; but in modern manufacture several plates are laid one on another, all bound in close contact, and yet free to bend independently of each other, by having the ends loose. The steel employed is prepared expressly for the purpose, and is brought by the rolling-mill to the thickness of about a quarter or three-eighths of an inch, and from one and a half to three inches wide. A compound spring, formed of several parallel plates, is hooped or bound together with an iron hoop shrunk on hot, and riveted. If it be a curved spring, the external plate is of course longer than the others, and is formed of thicker steel. All the plates are formed in a similar way. A piece of steel is cut to the required length, tapered and prepared at each end, and one or both surfaces are them 'middled,' that is, slightly hollowed by hammering. Near each end a slit is made about an inch long, in which a small rivet-head, attached to the next adjoining plate, may work. When four or more of such plates are combined, and hooped tightly in the centre, the ends are free to yield when any pressure is felt, and thus the pressure becomes equally shared by all. We may illustrate this action by the following supposition:—let a dozen laths be laid one on another, and bound or riveted tightly at both ends; they could not then be bent very far without fracture; but let them be bound only in the *centre*, and the whole will bend nearly as easily as a single lath, because the ends of each lath are free to conform to the curvature produced by the bending.



This cut represents the mode of forming one of the numerous variety of coach-springs. The assemblage of plates, after being prepared separately and laid one on another, is fixed firmly in a vice, and an iron band or hoop is hammered on, till it clasps the spring at the thickest part with great closeness. Before this is done, each plate is subjected to the action of the fire. It is first heated to a certain temperature, then plunged into water, then heated again till such a temperature is acquired as will ignite a small stick. These processes of 'hardening' and 'tempering' are requisite to the subsequent action of the spring. The plate is then 'set,' or hammered perfectly straight; then filed in all the parts which will be visible; and the plates are in this state ready to be combined in the form of a spring. The springs are built up much in this manner, whatever be their shapes or designations. As to the technical distinctions of the 'single-elbow spring,' the 'double-elbow spring,' the 'under-spring,' the 'nut-cracker spring,' the 'C spring,' the 'S spring,' and many others, we need merely here remark that they are various forms, adapted for different kinds of carriages, some for the coach, some for the phaeton, some for the cabriolet, &c., but that all are produced by similar trains of operation.

With respect to the numerous other pieces of iron-work required in a coach, and known to the workman by the technical names of plates, loops, stays, hoops, clips, bolts, steps, treads, joints, jacks, shackles, &c., all we can say is that they are specimens of smith's work requiring considerable skill and ingenuity.

The labours of the smith alternate, or rather, are simultaneous with those of the 'body-maker' and the 'carriage-maker,' and therefore we cannot profess to follow the precise order of proceeding. At certain

stages in the progress of the wood-work various pieces of iron are worked into their proper places, before other pieces of wood are connected together. This is particularly the case in 'carriage' mechanism beneath the body, in which a considerable quantity of iron is employed, the adjustment of which alternates with the work of the carriage-maker.

A remark may be applied to the 'coach-carver' similar to that applied to the 'coach-smith.' His labours are directed not to the coach as a whole, but to the several parts of it, during their progress. A coach-carver must necessarily be a man of some taste, even if he only executes patterns designed by others, but much more so if he designs them himself. His operations are of two different kinds, the simplest being that of carving the beadings and mouldings of the body or carriage, and the more elaborate that of producing the foliage and ornamental tracery which add so much to the beauty of a well-built coach. In 'state-coaches' this species of decoration is profuse and very costly;* but every coach, however simple, contains more or less carving. The tools of the coach-carver resemble those of carvers in general: they are more distinguished for their excellence than for their number or their size; and the workman depends more on his own taste and invention than on any prescribed rules of proceeding. The coach-carver is indeed an artist, and as such is highly paid.

One of the most remarkable operations in the construction of a coach is that of covering the upper part with leather; remarkable, we mean, in respect of the manual dexterity required. The panels, the quarters or upper panels, and the roof of a coach are very thickly painted, both for beauty of appearance and for durability. But the higher class of coach-builders do not trust exclusively to this external preservative; they cover the roof, and the upper part of the front, back, and sides, with leather, previous to the process of painting. It might be supposed that a hide of leather is for this purpose cut into pieces, one for the roof, one for each side, and so on; but the whole is covered with one hide, free from any joints or divisions whatever, and yet made to adhere closely to the wood-work in every part without folds or wrinkles. The hide, which is of a large size and sound quality, is first thoroughly moistened throughout and thrown over the top of the coach, the edges hanging down on all sides. The currier then rubs or presses it down all over the roof, until it lies close and even in every part. He next proceeds to one of the sides, and in like manner rubs and scrapes the leather till all irregularities disappear. The leather is in that soft and pliable state, that it will yield to the movement of the tools, and enable the workman to fit it to every part of the coach with perfect closeness. A little consideration must show that a superfluous fold of leather will occur at each corner; yet by working it towards a central point at the back or front, the currier succeeds in erasing or pressing out all irregularities, and in producing a surface sufficiently flat and smooth for the subsequent operations of the painter. The division between the upper and lower portion of a coach is usually covered by beading of some kind or other, and the leather is trimmed or cut to this line of division. This operation of covering a coach is as important as it is curious; for if a puncture be made through the leather, and rain-water enter even in minute quantity, the surface will be uneven and disfigured.

The other portions of leather required in a coach need not much description. They consist principally of bands and straps of various kinds. The leather or hide is laid out flat on a board and cut to the required shapes by means of sharp knives. Pieces are stitched together, or buckles, loops, rings, or straps, are fastened to them, in the same manner as harness-work generally is done. The workman sits at a low bench, and holding the piece of leather on which he may be at work between a pair of clams or boards, uses the awl and the sewing-twine in the same manner as the boot-maker. A horse's collar, and the general harness for a saddle-horse, do not come under the manufacturing arrangements of the coach-builder; but at the factory which we here describe, all the articles of leather required, either for the coach itself or for its attachment to the horses, are made within the walls of the building. A mode of employing leather in which much neatness and dexterity are required, is in covering the iron rails or bars which occur in gigs and phaetons, and other forms of private carriages. The leather, before being japanned or painted, is cut into strips, corresponding with the length and circumference of the rails to be covered, and is then tightly fitted on in a moistened state, the joints and angles being worked up with much nicety, and the meeting edges being stitched closely together.

A department of the coach-factory, very different from those which relate to the working of wood, iron, and leather, is that in which the painting, varnishing, and polishing are effected. The 'painter's-loft' is one in which a coach remains for a considerable period, and in which it receives no small share of its beauty of appearance. 'Coach-painting' is distinguished from ordinary house-painting by the large number of separate coats of paint laid successively one on another, and by the high degree of purity and polish given to the surface, rather than by any difference in the materials employed. The surfaces, whether of ash, oak, elm, deal, mahogany, iron, or leather, are coated so thickly with paint, that the materials themselves are effectually concealed. The paint is formed of the usual mineral colours, mixed with linseed oil and turpentine; and the varnish employed is that prepared from gum-copal, which, though slow in drying, is very durable.

The principal parts of a coach, such as the panels, the doors, the quarters, &c., receive as many as twelve or fifteen different coats of paint, each one being dried before the next following one is applied, and the whole being repeatedly smoothed or polished with rotten-stone, pumice, and similar substances. The earlier coats, as in house-painting, are termed the 'priming,' and are intended to form the foundation on which the subsequent coats are laid.

The earlier coats of paint are formed of white-lead and litharge, to which succeed many coats of white-lead and yellow-ochre. When this body of paint has been dried and smoothed, the layers of green, brown, yellow, or other selected colours are applied to those parts which are not customarily black, while black paint is laid on the parts just mentioned. A sufficient body of paint being thus laid on, the roof, the upper panels, and the sword-case (a protuberance at the back of a coach, introduced when gentlemen carried swords) are coated with several layers of black-japan, and the other parts of the coach receive six or eight coats of copal-varnish. The final process of polishing is deferred for some considerable time, to ensure the previous hardening of the varnish.

The painting of the wheels of a coach is done either by the coach-builder or the wheelwright, according to circumstances; but wherever it be effected, the process is nearly the same as for the 'carriage' part of a vehicle. The part of the coach-painter's work which requires the largest amount of care and neatness is that of 'picking-out,' or painting fine lines, scrolls, &c. of

* The carving of the present Royal state-coach of England, which was executed about eighty years ago, cost two thousand hundred pounds!

one colour on a groundwork of a different colour. That portion of the painting which relates to the heraldic arms and crests is altogether distinct from the rest, and is the work of a higher class of artisans called 'herald-painters,' whose services are paid for at a high rate. The herald-painter can lay no claim to comparison with the portrait-painter or the landscape-painter; but still, the accuracy of design, the neatness and clearness of outline, and the vividness of colour which he must display, require far more taste than that displayed by coach-painters, and give a higher value to his time.

Those to whom a sixpenny ride in an omnibus is a luxury are but little aware of the delicacy, the elegance, and the attention to personal comfort displayed in the interior fittings of a pleasure-carriage. In one of the Comedies of the last century, there is a scene in which a 'fine gentleman' laments that he has been unsuccessfully to all the mercers about town, to select for his coach a silk lining which would "suit his complexion." We do not imagine that the fine gentlemen of real life are so fastidious; but it is very certain that considerable taste is displayed in selecting not only the material, but the colour of the coach-trimmings. The principal materials employed in this manner are fine Spanish cloths, rich, plain, and embossed silks, embossed leather, richly woven lace, and horse-hair for stuffing cushions. The cloth is of the finest kind, and the silk is woven expressly for these purposes at Spitalfields. The lace employed is made sometimes of worsted, sometimes of silk, and in other instances of both combined, and it is used as a binding or edging for various parts of the interior; the finest is called 'broad-lace;' the next is termed 'pasting-lace,' about half an inch broad, and is employed to cover and hide rows of tacks; and another kind, called 'seaming-lace,' is used to cover seams and edges. The roof, sides, and various other parts of the interior of a coach are first brought to a level surface by wadding and canvas, and are then lined with cloth or silk. Cushions are covered with cloth, silk, or morocco leather, and are stuffed with horse-hair. The bottom of the coach, and the folding-steps which are shut up within the coach, are covered with carpet; and the neat appendages to the doors and windows are trimmed with cloth, lace, &c. in various ways. All these operations resemble very much those of the upholsterer, the cloth, lace, silk, and carpeting being in some places sewn and in others tacked down in their places. There is also a part of the *exterior* of a coach on which the trimmer is engaged, viz. the 'hammer-cloth.' This is a cloth covering to the coachman's seat, and is principally used for the more elegant kinds of coaches. The cloth of which it is formed is stiffened at the back, so as to enable it to fall in graceful folds. The upper and lower edges are trimmed with broad and rich lace; and the most conspicuous part of each side has usually an embroidered or chased crest. Temporary covers of oil-skin or some analogous substance are provided for the preservation of the hammer-cloth in wet weather.

A glance at the external appearance of a private carriage will show that iron is by no means the only metal employed in its construction, although it is by far the most important. Beading, plates, locks, hinges, handles, rings, buckles, crests, and ornaments of various descriptions, are made of one or other of the metals susceptible of receiving a good polish and of presenting a pleasing appearance. Brass is the principal metal employed for such purposes, or iron plated with a thin sheet of brass, where strength is required. Copper is slightly employed; so likewise is a white alloy of copper called 'white brass,' 'albata,' or 'German silver.' A considerable quantity of semi-cylindrical beading is used in various parts of a coach; and this is formed in a simple manner. An orifice is formed in an iron or steel plate, the exact pattern of the cross-section of the beading; and into this opening the end of a narrow slip of sheet-metal is introduced by a workman, as in the annexed cut. This end is



seized by a kind of pincers on the other side, which are then drawn backwards by means of a winch at the farther end of the bench. The slip of sheet-metal is thus drawn forcibly through the pattern-hole in the plate, and acquires the required semi-cylindrical form. The metal is made very hot by the compression it undergoes. The concave side of the beading is afterwards filled in with some soft kind of metal, and is provided with points or studs for fixing it to the coach. Sometimes the beading is made of copper, in which case it is afterwards painted; sometimes of brass, if to be left exposed and bright; while for the best coaches the beading is made of a strip of sheet-copper which has had a sheet of thinner silver united firmly to it by pressure in a flatting-mill: in this case, of course, the beading is drawn with the silver side visible.

The operation of *plating*, it need perhaps hardly be observed, is that of covering some of the cheaper metals with a coating of silver, with a view to give to the article both a beauty of appearance equal to that of solid silver and a degree of strength not possessed by silver. Many articles of coach furniture are prepared in this way, the silver being first formed into leaves, sheets, or ribands, and then firmly united to the surface of the cheaper metal by a peculiar application of heat and dexterous manipulation.

The chased ornaments, the coach-lamps, and other appendages of a well-built private carriage, we must pass over without any particular notice. Eight pages form but a narrow field for the building of a coach, and we can only hope to have given a few general notions on this very diverse, complicated, and ingenious department of English manufacture.

END OF VOLUME THE TENTH.

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's Inn Fields.

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